**Jonathan Strömberg**

# DISCUSSION ON IMPROVEMENTS TO THE FINANCIAL SUSTAINABILITY OF THE FINNISH EARNINGS-RELATED PENSION SYSTEM

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| Author<br>Jonathan Strömberg | | Supervisor<br>Pentti Pikkarainen, Professor of Practice | |
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Abstract

The aging demographic in developed economies makes the funding of pension systems a current topic, and the decrease of contribution incomes relative to the pension benefits to be paid an inevitability. The prevailing low-interest rate regime increases the present values of pension provisions and forces pension funds to undertake riskier and less liquid investments. The existing literature on the funding sustainability of the Finnish and other earnings-related pension systems makes several suggestions of more or less significant overhauls of the systems. However, fewer direct comparisons to practices in use in other pension systems are made, or suggestions of quick yet sustainable fixes. Significant overhauls to pension systems are slowed down by countries' respective political systems and the passions arising from social partners. Smaller updates could be easier and faster to implement while possibly leading to real increases in the sustainability of pension systems.

This thesis compares the Danish, Dutch and Finnish occupational pension systems with the aim of making suggestions of updates to improve the long-term financial sustainability of the system in Finland. The pension systems in each country are described in detail, and the realized and forecast figures are then compared to infer best practices. The existing literature is comprehensively reviewed and, against the mainstream of the literature, a speculative calculation on the effects of increasing the contribution rate in Finland as a means to improve the long-term financial sustainability of the pension system is performed. Suggestions and calls for action are made regarding six areas: efforts to increase employment; efforts to increase total fertility; cases for either decreasing the level of funding of contributions or increasing the contribution rate; to compile pension agreements on the sectoral or industry levels; to update and limit the solvency capital requirements; and to implement a pension ceiling.



Keywords

Pension, retirement, demographics, contribution, benefit, investments, sustainability

Additional information

**CONTENTS**

# 1 INTRODUCTION

## 1.1 Background and motivation

Pension systems throughout developed economies are facing long-term financing challenges due to aging populations (Gruber *et al.*, 2019; Ilmarinen, 2020). Poutiainen & Tenhunen (2020) assert the current level of contribution income in Finland will not suffice to pay pension benefits in the current fashion in the future. The increasing life-expectancy and low total fertility mean that future generations are smaller than their elders. In the partly funded, defined benefit (DB) Finnish pension system, where most of the annual pension benefits are paid with incoming contributions, this directly weakens the earnings-related pension (ERP) system's financing outlook as the incoming contributions diminish relative to the paid benefits (ibid.). The sustainability of the Finnish ERP system is based on three assumptions: i) balanced demographic development and a sustainable dependency ratio; ii) solid economic growth, productivity, and high employment; iii) reasonable investment returns. All three assumptions have been under stress since the Financial Crisis (Aaltonen *et al.*, 2017).

The financial sustainability of the ERP system is thus a current societal issue in Finland and affects everyone in the population. The concept holds within the levels of contribution income and benefit payments, the investment returns and the expenses in the system, and as a result the level of pension assets, but also demographic and employment developments. A broader interest in the pension system among the population would be beneficial to stimulate societal discussion and to incentivize policymakers to act. This thesis aims to compile current studies and discussion entries between the same covers and to make suggestions of applicable updates to the ERP system. The information is beneficial in giving an up-to-date picture of the state of the ERP system in Finland and thus enabling and encouraging better informed discussion.

## 1.2 Research gap and methods

The aim is to find methods additional to the ones most often discussed in the Finnish literature, to base suggestions for improving the financial sustainability of the Finnish ERP system on such findings, and thus expand the discussion in Finland. Literature provides multitudes of estimates and recommendations on courses of action, but few direct comparisons between practices in different pension systems. This thesis studies the occupational pension (OP) systems in Denmark and the Netherlands and through comparison with the Finnish ERP system makes suggestions of practices to adopt in Finland. While there are suggestions of more thorough overhauls of the funding construction of the system, e.g. Aaltonen *et al.* (2017), this thesis does not study or indeed suggest making significant changes to the level of funding or the accrual or payment of benefits. The partly funded ERP system is primarily funded by each generation in turn paying the accrued benefits of those on retirement, while accruing their own benefits (ibid.). This intergenerational agreement is one of the Finnish ERP system's cornerstones and accordingly the research question is: how to update the Finnish ERP system to improve long-term financial sustainability while supporting intergenerational equality, based on practices in Denmark and the Netherlands?

The research is predominantly qualitative in nature, although quantitative comparisons between the pension systems in Denmark, Finland and the Netherlands are made. A quantitative, yet speculative, exercise on the possible magnitude of effects of increasing the contribution rate in Finland is also conducted. The purpose of the exercise is to infer the likely range of benefits for the pension system, and to gain an understanding of the broader economic effects from raising the contribution rate. Literature from Denmark, Finland, and the Netherlands is comprehensively reviewed to gain an understanding of the functioning of the pension systems and related forecasts, and the surrounding demographic and employment developments. Statistics about the realized performance in the pension systems are extensively used, as are forecasts made by official institutions, associations of pension insurers and consultancies. The utilized material gives a look into the past, present and future of the pension systems and enables answering the research question.

The primary method will be a country-comparison between Denmark, Finland, and the Netherlands. Denmark and the Netherlands have been chosen due to their constant ranking as first and second, in alternating order, in international indices. The Melbourne Mercer Global Pension Index (MMGPI) is the most referenced index and the 2019 edition ranked the Netherlands as first, Denmark second and Finland fourth (MMGPI, 2019). The Danish and Dutch OP systems are fully funded as opposed to partly funded in Finland, and while the Dutch system is predominantly of the defined benefit type like in Finland, the Danish system is predominantly of the defined contribution (DC) type. Thus, there are one and two existential differences between the Finnish and the Dutch and Danish ERP systems, respectively. This thesis seeks to identify practices in use in Denmark and the Netherlands, and as suggested in the literature, that could be applied in the Finnish ERP system to improve financial sustainability.

## 1.3 Structure of the study

In order to answer the research question, how to update the Finnish ERP system to improve long-term financial sustainability while supporting intergenerational equality, based on practices in Denmark and the Netherlands, an understanding of the state of the pension systems must be obtained. With knowledge of the pension systems' workings, the facts and figures of the systems can be compared to each other to infer the effects of different practices. Proceeding, the discussion around the financial sustainability of the ERP system in Finland is reviewed to learn of the updates already suggested and of related analyses. A speculative calculation is also made on the effects of increasing the contribution rate in Finland. Finally, suggestions of practices to adopt in the ERP system are made.

The thesis proceeds by presenting country descriptions in chapter 2, performing comparisons of country data in chapter 3, reviewing the state of the discussion in Finland and performing an exercise on the effects of raising the contribution rate in chapter 4, and concludes in chapter 5.

# 2 COUNTRY DESCRIPTIONS

The characteristics of the OP systems in Denmark and the Netherlands and the ERP system in Finland will be discussed here. Note that the focus is specifically on the employees' pension systems and not on e.g. pensions for entrepreneurs. The retirement age, pension system funding, benefit level, differences between private and public sector pensions, applicable investment regulation, personal choice in pension saving and MMGPI (2019) attentions are discussed regarding each system. Following the country descriptions in chapter 2, chapter 3 will then compare funding and investment related data and indicators in more detail.

## 2.1 Denmark

The Danish pension system is a three-pillar system like in the Netherlands, set up with the aim of preventing old-age poverty. The base is the public *folkepension*, which is a tax-financed, universal old-age pension. The size of the *folkepension* benefit depends on the time a person has lived in Denmark. Until 1 July 2025, to qualify for the full *folkepension*, a person must have lived in Denmark for 40 years, while thereafter 9/10 years of residence between the age of 15 and the public retirement age is required (OECD, 2019a). In 1964, *Arbejdsmarkedets Tillægspension* (ATP) was founded to provide a supplementary pension to employees. Membership is voluntary for the self-employed (ATP, 2020). The fully funded ATP belongs in the 1st pillar as well, although it is financed by employees and employers – it is a statutory part of social security in Denmark, with one third of contributions paid by employees and two thirds by employers. The fully funded 2nd pillar OP system was set up in 1987 by social partners and is considered a supplementary pension to the statutory schemes. The OP system is set up at the sectoral level, although company specific pension schemes do exist. The 3rd pillar consists of private, voluntary pension arrangements through banks and insurance companies (Jensen *et al.*, 2019a). The focus in this paper will be on the 2nd pillar OP system and somewhat on ATP.

### 2.1.1 Retirement age

The 1st and 2nd pillar pensions have separate retirement ages. In 2020, the 1st pillar retirement age is 67 years. The public retirement age will be bound to life expectancy beginning in 2031. An individual may postpone starting the public pension and continue in employment, conditional on the individual earning income on at least 750 working hours in a calendar year. The postponement may be done twice for a maximum of 10 years. The final benefits will be larger if the starting date is postponed (OECD, 2019a). The 2nd pillar retirement age is 67 years (FCP, 2020a).

### 2.1.2 Pension scheme funding

The ATP Lifelong Pension has a fixed, uniform contribution based on hours worked by the employee. The final contribution is the maximum DKK 3 408 per year for most Danish employed people (ATP, 2020). OECD (2019b) reports the second pillar contribution rates at 12-18 %, depending on the sector. Jensen *et al.* (2019a) report the contribution rate for the construction, service, transportation, consumer goods and industry sectors to be 12 %, and 13 % for agriculture. Jensen *et al*. (ibid.) assert that sectors with similar health factors and life expectancy are bound together in the Danish OP system in order to limit transfers from occupational groups with shorter life expectancy to those with longer life expectancy and better health.

Pension providers are not bound by joint liability like in Finland and returns on pension assets directly impact individual pension savings under the second pillar OP system (Jensen *et al.*, 2019b). The second-pillar sectoral OP schemes are predominantly of the DC-type, with 95 % being DC and 5 % being of the DB-type. Like in the first pillar ATP, the employee pays 1/3 of the contribution in the second pillar pension scheme and the employer pays 2/3 (Chen & Beetsma, 2015). There are no separate social security payments in Denmark like in the Netherlands, where there is a specific payment related to AOW and health care. Instead, the public first pillar pensions are financed from general tax income (OECD, 2019a).

### 2.1.3 Benefit level

Public pension income is means-tested against all personal income, including the ATP and OP schemes. The basic amount, DKK 6 327 per month, is reduced at a rate of 30 % for income earned exceeding DKK 336 900 per year. The pension supplement is reduced at a rate of 30,9 % for single pensioners for income exceeding DKK 74 400 per year, and at 16 or 32 % for cohabiting or married pensioners for combined income exceeding DKK 149 100, depending on whether both receive social pension or not, respectively (OECD, 2019a; Beskæftigelsesministeriet, 2020). The public pension benefit level is adjusted annually based on two-year wage developments two years before the current fiscal year, e.g. the 2020 adjustment is based on 2017-18 wage developments (EC, 2018).

The maximum ATP pension is DKK 24 500 per year if an individual has been paying contributions throughout their working life, however the average ATP pension is DKK 16 400 per year (ATP, 2020). ATP also functions as life insurance and is the most common such product in Denmark. The policy provides surviving children under the age of 21 a lump sum of DKK 50 000 and a widow or partner DKK 75 000, if the deceased has paid ATP contributions for at least two years. The paid amount decreases by DKK 15 000 for every year the policyholder grows older after reaching the state retirement age (ibid.).

The second pillar OP benefits depend on the type of scheme the individual has – average rate or market rate scheme. In the former, benefits are based on average returns on pension savings, which are maintained with payments from the pension fund's bonus potential during downturns, and again in upswings the bonus potential is built up with excess returns. In the latter, the policyholder directly bears the investment risk. The share of market rate schemes is increasing, and in December 2019, 64 % of OP schemes remained average rate schemes (DKNB, 2019). Returns on pension savings are taxed at a rate of 15,3 % (OECD, 2019a). Jensen *et al.* (2019a) estimate the net replacement rates to range from approximately 118 % for the lowest-earning income decile to approximately 50 % for the highest-earning decile in 2025. The replacement

rates for all income deciles are estimated to increase by 10-20 percentage points by 2080 as the OP system reaches maturity, meaning its assets increase (ibid.).

### 2.1.4 Private vs. public sector pensions

There is a distinction between public and private sector pensions in Denmark. Public sector employees have been, and some still are, enrolled in a DB-type pension scheme, where the final replacement rate is up to 57 % of the final employment year's pay, if the worker has been a public sector employee for 37 years. However, few new public sector employees are included in the DB-scheme and are instead enrolled in a public employee-specific DC-type scheme similarly to the OP system. In 2016 there were 165 000 DB-type civil servant pension recipients, while it is estimated there will be 1 000 left in 2060 (EC, 2018). All public sector employees are enrolled in an OP scheme (OECD, 2019a).

### 2.1.5 Pension fund investment regulation

Very few limitations exist regarding asset allocation for Danish insurance and pension funds. OECD (2019c) reports that there are no asset allocation limits in effect, besides the Solvency II Prudent Person Principle for larger pension funds and life insurance providers and the Directive on the Activities and Prudential Supervision of Institutional Occupational Retirement Provisions (IORP2) Prudent Person Principle for small, single company pension funds. The Solvency II Prudent Person Principle stipulates that insurers invest only in assets whose risk profiles they can fully measure, monitor and take into account in their solvency needs, and that all assets must be invested in a manner that secures the liquidity and profitability of the portfolio. The IORP2 Prudent Person Principle is essentially similar to that in Solvency II, just the directive is specific to smaller actors (BaFin, 2020).

Danmarks Nationalbank (DKNB) (2019) reports that at the end of 2019Q3, insurance and pension companies had invested 43,8 % of their assets in bonds directly and 56,3 % indirectly, when investment funds and their investments into bonds are considered.

DKNB (ibid.) also reports that approximately 70 % the sector's U$D exposure is hedged, although the rate has been declining. The reason for the hedging rate is that insurance and pension companies have products with guaranteed returns, e.g. average rate pension schemes, that the companies must be able to pay in the future. Especially ATP uses hedging extensively – 80 % of the contributions paid to ATP are applied to such guaranteed pensions and hedged. Due to the high amount of ATP savings invested in relatively low-risk fixed-return assets, savers are seeing a negative rate of return after inflation. ATP has suggested the Minister of Employment to update its business model, to allow investing up to 40 % of savings in a return-seeking manner and leaving 60 % of savings to be hedged with a guaranteed yield (IPE, 2020).

Finanstilsynet (2017) notes that the on-going low-interest rate regime and increasing life expectancies have put pressure on guaranteed pension products, leading to the increased use of non-guaranteed products, i.e. market rate pensions. Pension companies have a solvency capital requirement obliging the company to meet obligations to policyholders over the next 12 months with a 99,5 % minimum probability. A pension company that has more guaranteed pension products bears greater risks related to meeting its obligations and thus needs more solvency capital. Such pension companies also generally invest less in equities. Asset allocation into equity after 2016Q2 was on average 22 % of average return product assets, while it was on average 37 % of market return product assets (ibid.). Finanstilsynet (2019) acknowledges the tough spot pension companies face, but also warns policyholders against switching to market rate products in hopes of greater returns without due consideration of the risks and market conditions, and possible net negative returns.

### 2.1.6 Individual choice in pension saving

Finanstilsynet (2017) reports it is common that pension providers offer clients a choice over the risk profile, i.e. the predictability and stability, of the pension product they are purchasing. In Denmark, the OP pension schemes are of the DC-type and individuals and generations are thus responsible for their own savings without intergenerational transfers. The OECD (2019a) reports that pension benefits are usually lifelong

annuities, but benefits may be front-loaded in the early phase of retirement or withdrawn as a lump sum. Jensen *et al.* (2019b) reports that approximately half of policyholders take the lump sum payment. Pension savings may be withdrawn early in Denmark, though the savings are then subject to a 60 % tax (DCTA, 2020).

The Danish OP system is the result of collective bargaining and many sectors have collective agreements dictating an employer's pension provider and scheme. The collective pension arrangements are set up around occupational groups with a similar health outlook and life expectancy to avoid redistribution between groups. If a company is not covered under such a collective agreement, they are free to choose their pension provider and scheme. Participation in the OP system is compulsory for employees and employers (OECD, 2019a; Jensen *et al.*, 2019a). The collective nature of pension schemes helps bring the operating costs of the pension system down: Jensen *et al.* (2019b) reports the operating costs of the Danish occupational pension system at 0,2 % of assets, versus 0,5 % in Finland. Everyone contributes to the first pillar *folkepension* through taxes and to ATP (Jensen, 2018).

### 2.1.7 Mercer Melbourne Global Pension Index 2019 attentions

MMGPI (2019) ranks Denmark on the second place of the 2019 Pension Index with 80,3 points, up from 80,2 a year earlier. Denmark has held first or second place in the index for years. MMGPI (ibid.) raises the issue of household indebtedness and urges countries to beware overt debt-raising, as future pension benefits may prove inadequate in relation to high levels of debt. Denmark is shown to have pension assets worth approximately 210 % of GDP, while net household debt is approximately 125 %. To improve the Danish pension system, MMGPI recommends Denmark increases the level of household saving and reduces household debt; improves the protection of pension benefits of parties in a divorce; and increases the labor force participation rate among the older population. Denmark took first place in the Sustainability category in 2019, 4$^{th}$ in Adequacy and 8$^{th}$ in Integrity. Adequacy accounts for 40 % of the overall mark, Sustainability for 35 % and Integrity 25 % (ibid.).

## 2.2 Finland

The DB-type ERP scheme started to develop in the 1960s, aiming to guarantee adequate income in old age and unemployment (TELA, 2020). The system is governed by the employee's pension law (*työntekijän eläkelaki*, TyEL), while entrepreneurs (*yrittäjien eläkelaki*, YEL), farmers (*maatalousyrittäjien eläkelaki*, MYEL), mariners (*merimieseläkelaki*) and public sector employees (*julkisten alojen eläkelaki*, JuEL) have their own legal frameworks. The systems are similar except for the entrepreneurs' pension system, which is a pay-as-you-go (PAYG) arrangement. The main focus is on the TyEL and JuEL ERP systems.

### 2.2.1 Retirement age

The lowest retirement age in the employees' pension system is 63 years for people born in 1954 or earlier with the age limit rising per cohort until for those born in 1965 and later the age limit is tied to life expectancy. The highest pension insurance age is 68 – 70 years depending on the birth cohort. Most apply to start their pension at the minimum allowed age (Barr, 2013). It is also possible to apply for a partial old-age pension as a part of the ERP system, allowing the retiree to receive 25 or 50 % of their accrued pension benefits and to continue working simultaneously. The minimum age for the partial old-age pension is cohort dependent, but in general it is three years before the minimum retirement age. The partial old-age pension is reduced by 0,4 % for every month by which the retiree is younger than their cohort's minimum retirement age, and the benefit is life expectancy-tested. The retiree may continue in employment while receiving the partial old-age benefit (FCP, 2017).

### 2.2.2 Pension scheme funding

The Finnish employees' ERP scheme is a DB system, where pension benefits are based on salary history, and individual pensions are unaffected by investment returns. The employer and the employee, both funding the employee's future pension, know the future level of the pension at the time of paying the contributions. In private sector

pensions, 5/6 of the annual contribution income is used to pay out current pensions and 1/6 is funded. Approximately 1/4 of annually paid pension benefits are covered with the accrued pension funds, while 3/4 are covered with contribution income directly. Investment returns then top up the pension funds. The funds' purpose is to ease the pressure to raise contribution rates as the population grows older and living expenses increase (TELA, 2020).

### 2.2.3 Benefit level

The annual contribution to the retirement scheme is 24,4 % of an employee's gross annual retirement scheme insured income, of which employees aged 18 – 52 and 63 – 68 pay 7,15 % and those aged 53 – 62 pay 8,65 %, while the employer pays the rest. The higher personal contribution for those aged 53 – 62 is due to the idea that at the later stages of a career, the employee is likely to earn more, and thus can contribute more. 1,5 % of an employee's annual retirement scheme insured income increases the employee's future pension. At 53-62 years of age the employee's pension increases by 1,7 % of the annual income until 2025, when the transition period following the 2017 pension reform ends. After the minimum age cohort-specific pension age, every additional month the employee continues working increases their future pension benefits by 0,4 % per month (FCP, 2020a; TELA, 2020).

In addition to the ERP scheme, there are two public, tax-paid pension schemes that act as social insurance: the national and guarantee pensions. In case monthly earnings-related pension income is €56,04 or below, a person can receive the full monthly national pension, €662,86, or €591,79 if the person is married or cohabits. A person is eligible to receive guarantee pension when their pension income is below €827,78. The guarantee pension is paid by KELA on top of other pension income to form a total monthly pension income of €834,52. In case a person has retired at an earlier age than the system calls for and started to withdraw their pension, the level of the guarantee pension is lower (FCP, 2020a).

### 2.2.4 Private vs. public sector pensions

The retirement system is split into different frameworks legislatively. Both the private and public sector employee's pension systems, TyEL and JuEL respectively, are of the defined benefit-type. JuEL has had special conditions regarding retirement age, pension contributions and increases in the level of future pensions, however today the benefit accrual is similar as in the private sector TyEL. The JuEL pensions are administered by Keva, formerly *Kuntien eläkevakuutus*, which is a public institution. Keva is the largest pension provider with assets over €56 bn at year-end 2019 (KEVA, 2020). The State Pension Fund of Finland (VER) invests and administers the general government employees' pension assets. VER does not administer pension benefits or rights, instead it is a buffer fund and Keva administers all public sector pensions benefits. As a buffer fund, VER is exempted from the solvency requirements that bind private sector pension companies. Keva is also exempted as it is not bound by the joint liability for pension assets like the private sector companies are (TELA, 2020).

The private sector TyEL has four private sector pension companies: Elo, Ilmarinen, Varma and Veritas. Ilmarinen and Varma are the largest, with €46,4 bn and €43,6 bn in assets, respectively, after 2020Q1 (TELA, 2020). Additionally, there are some company-specific and industry-wide pension funds and trusts, which together administer pensions for approximately 2 % of all the ERP insured. The number of company-specific and industry-wide funds and trusts has decreased significantly in the 2000s (FCP, 2020a). At the end of 2019, the Finnish occupational pension scheme providers, private and public combined, had €215 bn worth of investment assets under management. The private sector funds had €135 bn altogether, while the public sector funds had €81 bn (ibid.). After 2020Q1, the four private sector pension companies' assets had declined from €128 bn to €116 bn while public sector assets were at €68 bn (ibid.). At the end of 2019, all pension investment assets in Finland amounted to 89,7 % of GDP (ibid.).

### 2.2.5 Pension fund investment regulation

The private pension funds' investment allocation possibilities are limited with capital requirements. A pension provider assesses the risks stemming from its investment allocation for the next year and it has to be able to cover 97 % of that sum should its risks realize, which is the solvency capital requirement (FCP, 2020a). Stock allocation is limited to a maximum of 65 % of assets by law, but in practice direct stock allocations have varied between 30 – 45 % of assets for the private pension providers after the 2008 financial crisis. The allocation has been approximately 10 %-points higher for public pension providers (FINLEX, 2020; Rantala, 2020).

The private pension funds face a deviation risk related to the solvency capital requirement and a fund transfer obligation. Based on the average private sector pension provider investment returns, a single pension fund must pay into their pension asset fund from their investment returns. In case the single pension provider achieves below-average returns, the missing part has to be paid into their funded assets from their solvency capital. This decreases the pension provider's solvency capital, thus decreasing their ability to take investment risk, and calls for achieving above-average future period returns to fill in their solvency capital again. Lower solvency capital also results in a decreased ability to pay client bonuses (Rantala, 2020).

The purpose of the deviation risk mechanism is to incentivize private sector pension providers to strive for higher returns and to ensure the adequacy of pension liabilities. A side-effect is that the pension funds' investments have become homogenous. The investment return correlations of the private sector pension providers are between 0,94 – 1,00, suggesting there are few actual diversification benefits stemming from competition between the pension providers, which was originally an objective in having multiple private sector pension companies (Aaltonen *et al.*, 2017).

### 2.2.6 Individual choice in pension saving

An individual has no choice over their pension provider or the pension provider's investments. The employer chooses the pension provider, or the provider is automatically a public pension provider in case of a public sector employer. Originally, the employer paid the entire pension contribution and it was a regular business for pension providers to loan back funded components from an employer's pension contributions to the employer. The private sector pension providers compete with investment returns, which are visible to clients in the form of client bonuses, but an individual saver has no choice over the pension provider, investment profile or the level or timing of pension contributions, which could lead to the individual becoming indebted (Jensen, 2019b).

Regulation regarding pension providers is set in the Finnish Law and is enforced by the Finnish Financial Authority (FIN-FSA). The investment allocations available to pension providers are restricted by law because the earnings-related pension scheme is a law-mandated part of social security in Finland and the pension providers are bound by joint liability. Joint liability means that outstanding pensions will be paid also in the case a pension provider would go bankrupt – the other pension providers will then take on those pension liabilities (FCP, 2020a).

The ERP scheme has limited individual choice over saving, which Barr (2013) argues is supported by behavioral economics. Barr (ibid.) argues an individual could make unfavorable consumption choices future-wise, opting to consume more at an earlier stage in life and become ill-equipped to support themselves later. Furthermore, an individual may be uninterested or incapable of figuring out optimal pension saving, and individual choice could increase systemic costs due to controlling for adequate individual saving efforts and the operations of additional pension providers (ibid.).

### 2.2.7 Mercer Melbourne Global Pension Index 2019 attentions

MMGPI (2019) recommends Finland to increase minimum pension benefits, to increase the level of pension contributions, to improve individual pension security in case of a divorce and to improve the employment rate among older workers. Finland fell from fourth to third place in 2019 due to changes in calculation conventions (MMGPI, 2019; FCP, 2020a). Finland received the top score in the Integrity assessment area, while being ranked 7$^{th}$ in Adequacy and 10$^{th}$ in Sustainability. Adequacy makes up 40 % of the mark, Sustainability 35 %, and Integrity 25 %. MMGPI (2019) notes that household debt increases by $ 0,466 for a $ 1 increase in pension assets. The report argues that as future income is better secured, i.e. future pension income becomes more secure, households feel more comfortable increasing indebtedness. The report does not name Finland in particular but urges for caution in avoiding overt household indebtedness (ibid.).

## 2.3 The Netherlands

The Dutch pension system is a three-pillar system. The first pillar is the *Algemene Ouderdomswet* (AOW) act set up in 1957, which is a pay-as-you-go and partially tax-financed state pension aiming to prevent old-age poverty. The second pillar is occupational pensions, in which over 90 % of Dutch employees participate. The second pillar pensions schemes are mostly of the DB type and are fully funded. The second pillar is split into three types of pension funds: industry-wide pension funds mandated by law, company-specific pension funds, and pension funds for employees in particular professions. The third pillar consists of individual schemes, which is mostly for those not covered under the second pillar (Jensen *et al.*, 2019b; Pensioen Federatie, 2020). The focus here is on the second pillar pensions, comparable to the Finnish ERP scheme, though the Finnish scheme is a first-pillar scheme as it is a law-mandated part of social security.

### 2.3.1 Retirement age

The target retirement age in the Netherlands is 68 years. Earlier or later retirement is possible, whence the pension benefit will be recalculated to be lower for early starters and higher for those working longer. The maximum retirement age is five years from the date of turning 68. It is possible to postpone starting the retirement and not work during the period. The minimum age for the AOW was increased to 66 years 4 months on 1.1.2019, and will further be increased to 67 years in 2024 and be linked to life expectancy thereafter (Belastingsdienst, 2020; Pensioen Federatie, 2020).

### 2.3.2 Pension scheme funding

Most of the Dutch second-pillar pension schemes are of the DB-type. However, pension funds are also approximately fully funded, and the annuities are variable based on a pension fund's investment strategy, which are DC scheme characteristics (Jensen *et al.*, 2019b; IMF, 2019). In case a second-pillar pension fund faces problems, all fund stakeholders share the costs. Possible measures to remedy a pension fund's capital shortage are raising contributions, increasing the employer's wage costs and decreasing the employee's net wage, limiting the index-linked increasing of benefits, and in extreme cases cutting pension benefits to fix the coverage ratio of a fund. Most Dutch pension funds have not indexed benefits since the 2008-09 crisis. Between 2010-2019 the Dutch pension assets grew from €701 bn to €1561 bn. The number of pension funds in the Netherlands is currently 214 (DNB, 2020a; DNB, 2020b; Pensioen Federatie, 2020). The 2019 Dutch GDP was €810 bn which means that the Dutch pension assets were approximately 193 % of GDP at the end of 2019 (Statistics Netherlands, 2020a).

DC-type pension schemes are rising in popularity, as the costs are easily calculable and low. The IFRS accounting standard and the low interest rate environment have precipitated the development. In a DC-scheme the individual pays a contribution and receives a benefit depending on the returns to their contributions. The individual bears the investment and interest rate risks, and the final benefit may be considerably lower

than originally estimated. Individual DC-pension schemes are rare. From the perspective of international accounting standards, most Dutch pension schemes are seeing as being of the DC-type, because pension liabilities must be fully funded, though the schemes pay an annuity and are otherwise organized as DB-schemes. There are also hybrid Collective Defined Contribution (CDC) schemes, where the benefit is based on income and employment years like in DB-schemes, but the contribution is fixed for years at a time like in DC-schemes. If the contribution turns out to have been too low to afford the planned benefit level, the final benefit will be lower than planned (Pensioen Federatie, 2020).

The industry-wide pension schemes have the most participants, with three quarters of Dutch employees covered by such schemes. In the second pillar schemes the average contribution rate is 24 % of an employee's pension insured earnings – on average the employer pays 17 % and the employee 7 % (Karpowicz, 2019). Everyone pays the contribution, and everyone accrues their pension benefit by a similar amount for the paid contribution. The 2019 pension reform introduces a change where an older employee receives a smaller accrual in their benefits per contribution, as their paid contributions have less time to accrue returns before retirement (EC, 2019). When changing jobs, an employee can choose whether to move their accrued benefits to a pension fund associated with the new employer or to keep the benefits in the previous pension fund. If the previous pension fund's coverage ratio is below 100 %, the accrued benefits cannot be moved to another pension fund (Pensioen Federatie, 2020).

### 2.3.3 Benefit level

Pension contributions are paid from the gross salary including benefits, after deducting the AOW payment share. In an average income pension scheme, a maximum of 1,875 % of annual income is accruing the pension insured's future benefit. In a final income scheme, a maximum of 1,657 % of annual income is accruing the future benefit. The average income pension scheme means that after paying pension contributions for 40 years, the pension insured will receive a maximum of 75 % of their average working life salary as pension benefits. The highest annual income considered for pension

insurance in second-pillar schemes has been €110 111 since 1 January 2020. Any income above this amount can be pension insured by the individual if so desired in a third-pillar scheme or be saved as a net-pension: save an annuity of the above-maximum share with a similar 1,875 % maximum contribution rate. When saving a net-pension, the resulting future pension annuities are tax-free as income tax has already been paid from the salary (Belastingsdienst, 2020). Eurostat (2020) reports the aggregate pension replacement rate in the Netherlands at 52 % in 2019.

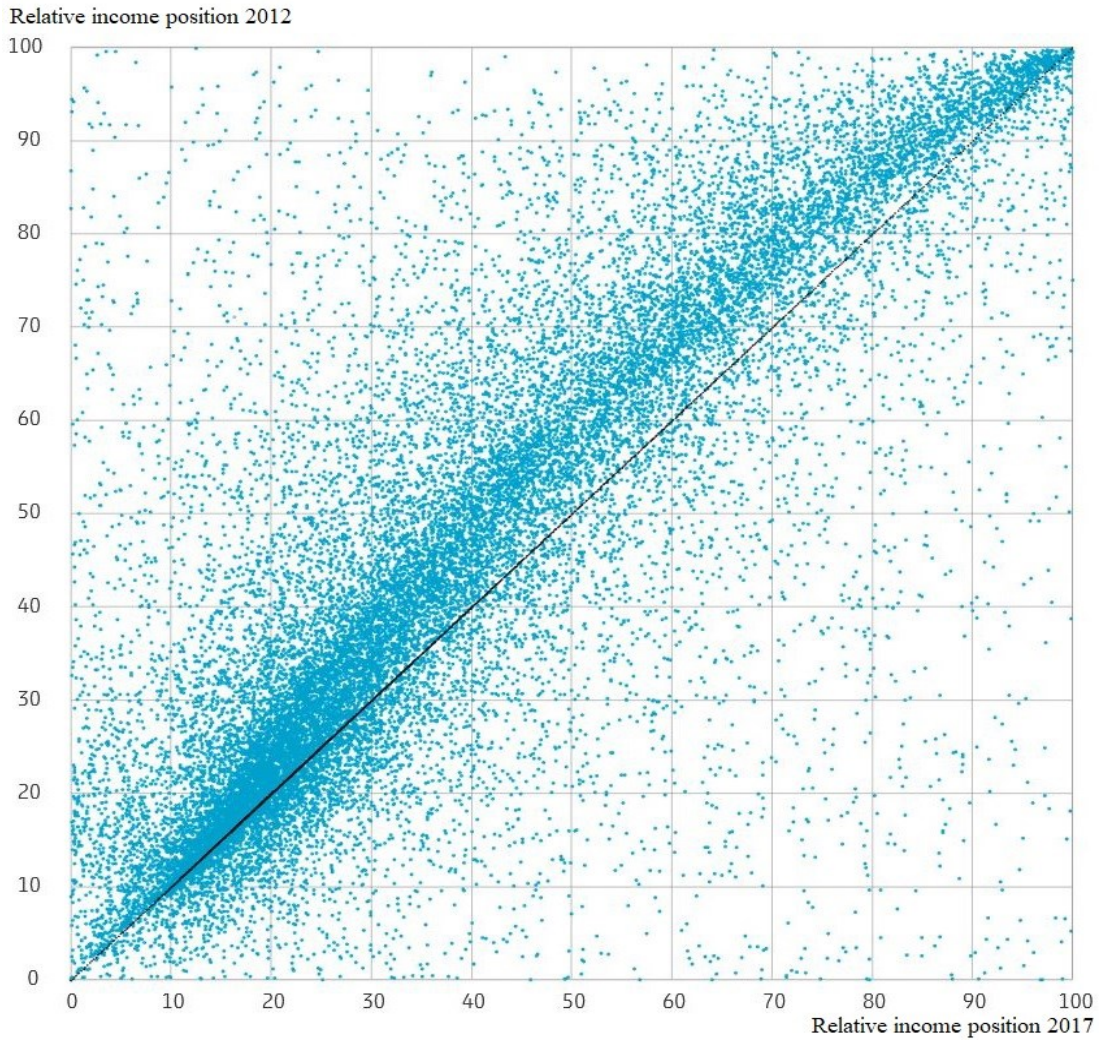


Figure 1: *Relative income position of Dutch pensioners 2012-2017* (Statistics Netherlands, 2019).

Figure 1 shows the relative income position of pensioners in the Netherlands weakened between 2012-2017. It shows that those with low income maintained their position on

the income ladder, while those with higher income saw a decline in their purchasing power (Statistics Netherlands, 2019). Those higher up the income ladder receive a greater share of their income from occupational pension schemes, which mostly have not been index-raised since the 2008 crisis, resulting in the group's relative income position weakening.

### 2.3.4 Private vs. public sector pensions

The Dutch public sector employees' pensions are administered by specific pension funds, but the pension schemes overall are similar to those in the private sector (Palacios & Whitehouse, 2006). The government and education sector employees' pension fund ABP is the biggest in the Netherlands with €459 bn in pension assets and €518 bn in liabilities, and a coverage ratio of 88,7 % as of February 29 2020 (ABP, 2020).

### 2.3.5 Pension fund investment regulation

There are no specific limits to asset allocation for Dutch pension funds, like the 65 % upper limit to equity allocation in Finland (OECD, 2019c). The funding position of pension funds is controlled, however. De Nederlandsche Bank (DNB) supervises the pension funds' funding ratio – the ratio of a fund's pension assets to its pension liabilities. The funding ratio is an indicator of the fund's health and dictates whether the fund can make index-linked increases to pension benefits or not, and if the fund must remedy its position by e.g. raising contribution rates or cutting benefits. If the funding ratio is 110 % or greater, the fund can apply index-linking; if the funding ratio is 104 – 110 %, index-linking is ceased; and if the ratio falls below 104 %, the fund will eventually have to take measures. If a pension fund fails to meet its minimum own funds-requirement for five consecutive years, or its funding ratio falls below the fund-specific critical lower limit, the fund will have to raise contributions and in extreme cases cut pension benefits (DNB, 2020b). After 2019Q2, 51 pension funds that together administer 60 % of all Dutch pension rights had coverage ratios below 104

%, while 53 funds responsible for another 20 % of all pension rights were between 104 – 110 %, and were thus unable to apply pension indexation (DNB, 2020b).

### 2.3.6 Individual choice in pension saving

The individual has limited choice over pension savings and how they are invested in the second-pillar pension schemes (van Dalen & Henkens, 2018). In principle, it is not mandatory for the individual to participate in a pension scheme, but many employers are required to provide a pension arrangement for their employees. Participation in such provided schemes is made mandatory under Small Mandatory Participation, leading to more than 90 % of all Dutch employees participating in the second-pillar occupational pension system. Large Mandatory Participation compels employers to offer a pension scheme. Due to the combination of Small and Large Mandatory Participation, over 75 % of Dutch employees participate in a sectoral pension scheme. The mandatory participation of employers in sectoral pension schemes is argued with preventing employers from competing based on their pension arrangement. However, an employer may be exempted from participating in a sectoral pension fund e.g. if the fund has underperformed for the past five years (Chen & Beetsma, 2015).

Karpowicz (2019) defends the easier ensuring of the system's sustainability, limiting the effects of the participants' cognitive biases and financial illiteracy, the participants' stronger bargaining power in the markets, and the pooling of longevity and systemic macro risks resulting from the mandatory, collective pension schemes. As the mass of pension assets is administered by sectoral pension funds and multiple employers participate in the same schemes, the operating costs are also low compared to a pension system with employer-specific pension schemes: Jensen *et al.* (2019b) reports operating costs in the Netherlands at 0,1 % of assets vs. 0,5 % in Finland.

### 2.3.7 Mercer Melbourne Global Pension Index 2019 attentions

The Dutch pension system was again ranked first in the MMGPI (2019) with 81,0 points. The Netherlands' points rose from 80,3 to 81,0 due to changes in calculation

conventions regarding net pension benefits and increases in household net savings. Household indebtedness has been decreasing since its 2010Q3 peak of 119,6 % of GDP to 100,9 % after 2019Q3 (ECB, 2020). The Netherlands is recommended to further decrease household indebtedness and to increase the employment rate for older generations as life-expectancy continues to grow. MMGPI (2019) asserts that a higher level of pension assets predicts a higher level of household indebtedness, as households feel more comfortable taking on debt as future income is better secured. The Netherlands was ranked third in Adequacy with 78,5 points, second in Sustainability with 78,3 points, and third in Integrity with 88,8 points (ibid.).

# 3 COUNTRY COMPARISONS

This chapter will compare the funding indicators of Denmark, Finland, and the Netherlands. The indicators' implications will then be discussed to gain an understanding of the positives and negatives of the pension systems. The first section handles funding data: the level of funded pension liabilities, pension benefits in relation to contribution income and GDP, administration costs, employment data, retirement ages, and mean pensions. The second section covers investment returns, allocations and funding ratios. Section three compares the attentions and update suggestions made in MMGPI (2019) regarding each pension system.

## 3.1 Funding indicators

Table 1 presents the pension liabilities as a share of GDP and the funding ratio, that is pension assets to liabilities. The liabilities as a share of GDP in Finland, 316 % at the end of 2017, are vastly greater than in Denmark or the Netherlands. The high value of pension liabilities to GDP in Finland can be explained by the ERP system's longer history than its counterparts' in Denmark and the Netherlands. Liabilities are the pension benefits that workers have so far accrued and that are to be paid out as pensions when the recipients have retired. Tikanmäki *et al.* (2019) have calculated the 2017 Finnish pension liabilities using a discount rate of 2,5 % through 2028 and 3,5 % after. If the discount rate was lower, the value of the pension liabilities would increase. This could be understood as the price of providing the earned pension benefits increasing. Index-linked increases to pension benefits are the greatest contributor to annual increases in pension liabilities in Finland (Poutiainen & Tenhunen, 2020).

The Finnish ERP system is partly funded, which means a part of the assets required to pay out future benefits exist as accumulated pension assets, while most of the annual benefits paid out are financed by incoming contributions. The funded share of contributions in the TyEL scheme has ranged from 8,8 % to 24,1 % over 2007-2019, being on average 19,2 % (FCP, 2020b). One of the arguments for the partly funded system is that when there are negative economic developments, the contributions or

benefits do not need to be adjusted as quickly to retain a healthy funding ratio. Instead, the required updates to the system can be reviewed over time and the risk of falling income in the system is shared with future generations (Barr, 2013).

The OP systems in Denmark and the Netherland are fully funded, meaning the assets required to pay out benefits in the future are mostly accumulated with the contribution payments made to the system. Investment returns further increase assets. In the Danish DB pensions, a small share of the contribution is transferred to a pension fund's bonus potential, which is a pool of assets used for targeting higher investment returns for all scheme participants. In case the bonus potential has not been consumed in ensuring the promised benefit level, participants receive their share back upon retirement. However, some Dutch DB schemes are facing contribution rate increases or benefit cuts, as the prevailing interest rate regime has made providing the promised benefit levels more expensive (Reuters, 2020).

**Finland**

**Pension liabilities 31.12.2017**

| Discount rate | Pension system | Liabilities, € bn | % of GDP | Pension assets, € bn | Funding ratio |
|---|---|---|---|---|---|
| 2,5% through | Statutory ERP system | 714,5 | 316 % | 202,3 | 28,3 % |
| 2028, 3,5 % | Private sector | 414,2 | 183 % | 126,2 | 30,5 % |
| after | Public sector | 231,8 | 103 % | 71,9 | 31,0 % |

**Denmark**

**Occupational pension provisions**

| | Provision type | Provisions, DKK bn | % of GDP | % of Total provisions | Assets, DKK bn | Funding ratio |
|---|---|---|---|---|---|---|
| 31.12.2018 | Total provisions | 3 449,22 | 153,6 % | | 3 925,42 | 113,8 % |
| | Average rate pensions | 2 203,18 | | 63,9 % | | |
| | Of which bonus potential | 173,90 | | | | |
| | Market rate pensions | 1 124,22 | | 32,6 % | | |
| 31.12.2019 | Total provisions | 3 888,89 | 167,5 % | | 4 521,95 | 116,3 % |
| | Average rate pensions | 2 424,51 | | 62,3 % | | |
| | Of which bonus potential | 242,55 | | | | |
| | Market rate pensions | 1 319,32 | | 33,9 % | | |

**Netherlands**

**Occupational pension provisions**

| | Provision type | Provisions, € bn | % of GDP | % of Total provisions | Assets, € bn | Funding ratio |
|---|---|---|---|---|---|---|
| 31.12.2018 | Total provisions | 1 286,19 | 171,7 % | | 1 328,71 | 103,3 % |
| | DB schemes | 1 160,60 | | 90,2 % | | |
| | DC schemes | 9,22 | | 0,7 % | | |
| | Hybrid schemes | 62,57 | | 4,9 % | | |
| 31.12.2019 | Total provisions | 1 500,33 | 192,6 % | | 1 560,70 | 104,0 % |
| | DB schemes | 1 205,62 | | 80,4 % | | |
| | DC schemes | 12,06 | | 0,8 % | | |
| | Hybrid schemes | 52,20 | | 3,5 % | | |

Table 1: *Pension liabilities to GDP and assets to pension liabilities* (DNB, 2020a; Statistics Denmark, 2020; Statistics Netherlands, 2020a; Tikanmäki *et al.*, 2019; own calculations)

Figure 2 depicts the pension expenditures and contributions as a share of GDP in Finland. The total expenditures include all social security pension payments and the total contributions include government contributions paid with tax funds. The earnings-related pension figures include both TyEL and JuEL expenditures and contributions. In 2019 the estimated gap in earnings-related pension income and expenditure is -2,4 %-points of GDP (FCP, 2020b). The Finnish population will grow until the mid-2030s and then start declining. The ratio of 65-year-olds and older to the working age population (15-64 years of age) will keep increasing until 2085 due to low fertility and increasing life expectancy. The ratio was 34,2 % in 2017 and is estimated to be 66,1 % in 2085. Pension expenditure as a share of GDP is expected to increase considerably towards 2085 due to the working age population shrinking. The contribution rate in the ERP system is expected to start increasing rapidly from the current 24,4 % around 2050 due to low fertility and to rise above 30 % in the 2070s (Tikanmäki *et al.*, 2019).

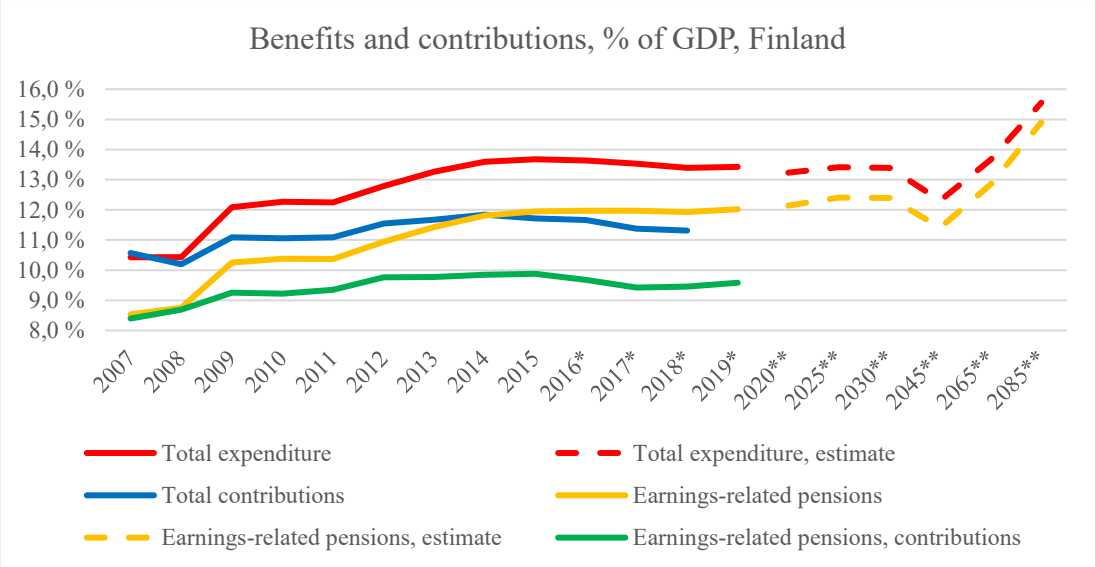


Figure 2: *Earnings-related pension benefits and contributions as a share of GDP in Finland* (FCP, 2020a; FCP, 2020b; Reipas, 2019; Statistics Finland, 2020a). * = Statistics Finland (2020a) preliminary GDP records; ** = Reipas (2019) estimates.

Figure 3 presents the Danish OP benefits and contributions to GDP. Denmark has a public first-pillar pension system, which forms a significant part of overall pensions. EC (2018) state that the public pension benefits were 10 % of GDP in 2016. EC

estimates the public pension benefits will decrease to 8,1 % of GDP by 2070, while private sector OP benefits will increase to 7,0 % of GDP by 2070. The Danish OP system is not yet mature, but funds and pension rights are still being built, which is why the private sector pensions seem low as a share of GDP. More OP system participants start retiring in the 2030s, which shows as the benefits to GDP ratio increasing from thereon (ibid.). For comparison, the ERP system benefits in Finland made up 89,5 % of total pension provision in 2019, whereas the OP system in Denmark made up roughly 1/3 in 2016 (EC, 2018; FCP, 2020b).

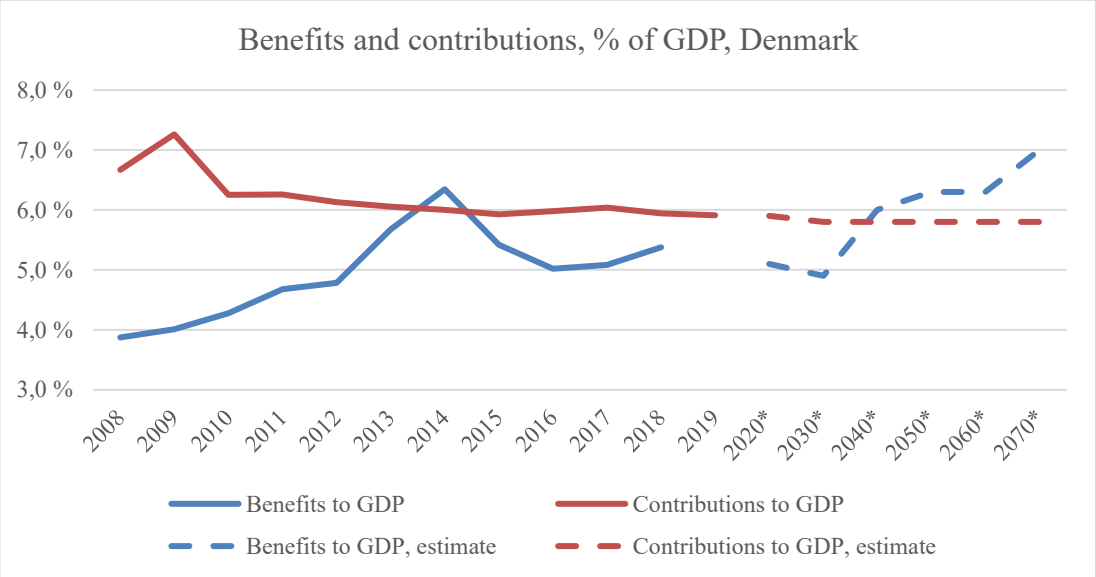


Figure 3: *Occupational pension benefits and contributions as a share of GDP in Denmark* (ATP, 2020; EC, 2018; Forsikring og Pension, 2020; LD, 2020; Statistics Denmark, 2020). * = EC (2018) estimates.

Figure 4 presents the Dutch OP system benefits and contributions to GDP. Similarly to Danish second pillar pensions, the Dutch OP system is young, which shows as the contribution income being higher than benefits until 2016. The Netherlands also have a significant public first pillar pension system, which EC (2018) reports at 7,3 % of GDP. Public pension expenditure is estimated to rise to 8,5 % of GDP in 2040 and then to decline to 7,9 % in 2070. The private sector OP benefits make up around 40 % of total pension benefits. The peaking private sector benefits in 2040 are due to large age cohorts retiring at that time (ibid.). As their pension savings are already funded,

the amount of pension assets will diminish accordingly, and immediate contribution rate hikes are not required.

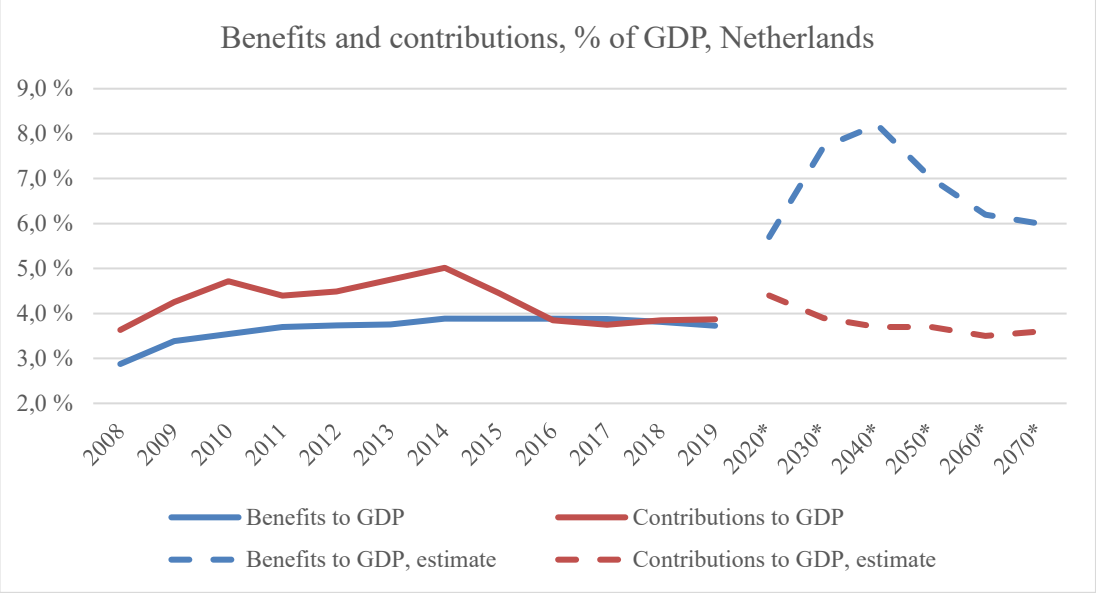


Figure 4: *Occupational pension benefits and contributions as a share of GDP in the Netherlands* (DNB, 2020a; EC, 2018; Statistics Netherlands, 2020a). * = EC (2018) estimates.

Figure 5 shows the administration and investment costs of the OP systems in Denmark, Finland and the Netherlands. The costs have been pushed the lowest in Denmark, while historically the highest administration costs have been incurred in Finland. Jensen *et al.* (2019b) attribute the historically lower administration and investment costs in Denmark and the Netherlands to the fact that pension arrangements are made at the sectoral level instead of company level. The mandatory nature of the pension system in all three countries is accredited with limiting adverse selection. Better Finance (2019) quotes a 2014 study by the Dutch Authority for the Financial Markets, which presented that a 0,1 %-point annual decrease in costs leads to 3 %-points higher retirement income in a medium period of 25 years.

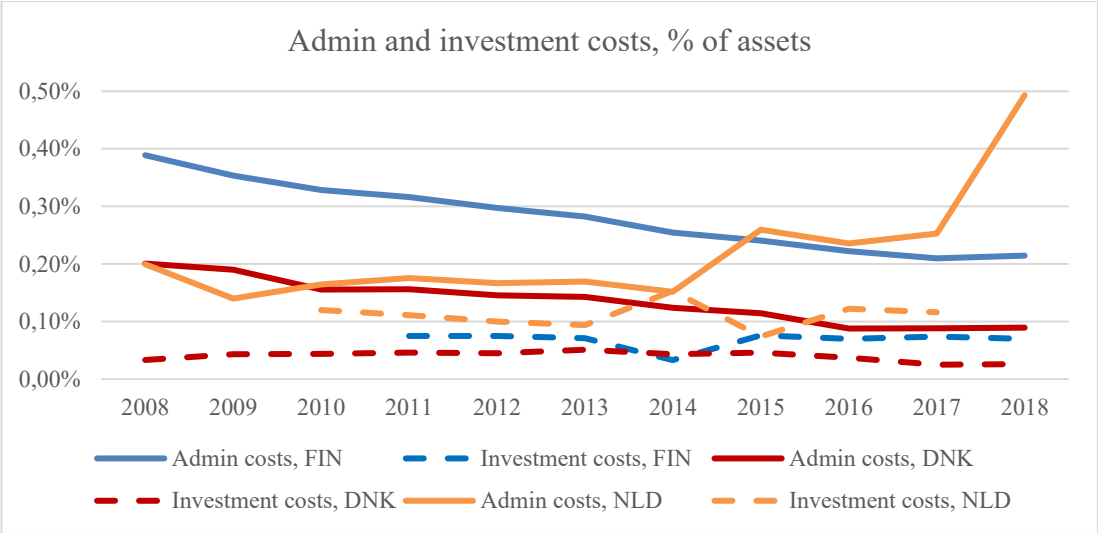


Figure 5: *Admin and investment costs, % of assets in Denmark, Finland and the Netherlands* (DNB, 2020a; FCP, 2020b; OECD, 2020; Statistics Denmark, 2020).

Figure 6 shows the employment rate for the 15-64-year-old population in Finland, Denmark, and the Netherlands. Data until 2019 shows Finland already lagging considerably and forecasts show the gap widening towards the end of the century (EC, 2018; Tikanmäki *et al.*, 2019; Statistics Netherlands, 2020a). However, the forecasts pre-date the COVID-19 pandemic, meaning the trends will likely be lower for all three countries in the near term. The pandemic's effects will be discussed in chapter 4.3. Employment data is an important indicator for the funding sustainability of a pension system, especially for a partly funded DB system like in Finland. MMGPI (2019) has consistently recommended Finland to improve its labor force participation especially among older ages and expressed worry over intergenerational equality in the Finnish ERP system. The removal of unemployment pathways to retirement (*eläkeputki*) could increase employment by 5 000 – 10 000 workers, but the effect is hard to quantify. The Finnish employment rate is depressed by incapacity for work caused by mental and other health issues, and by the lack of part-time employment, which is common among the young and the old elsewhere (Kauppalehti, 2020).

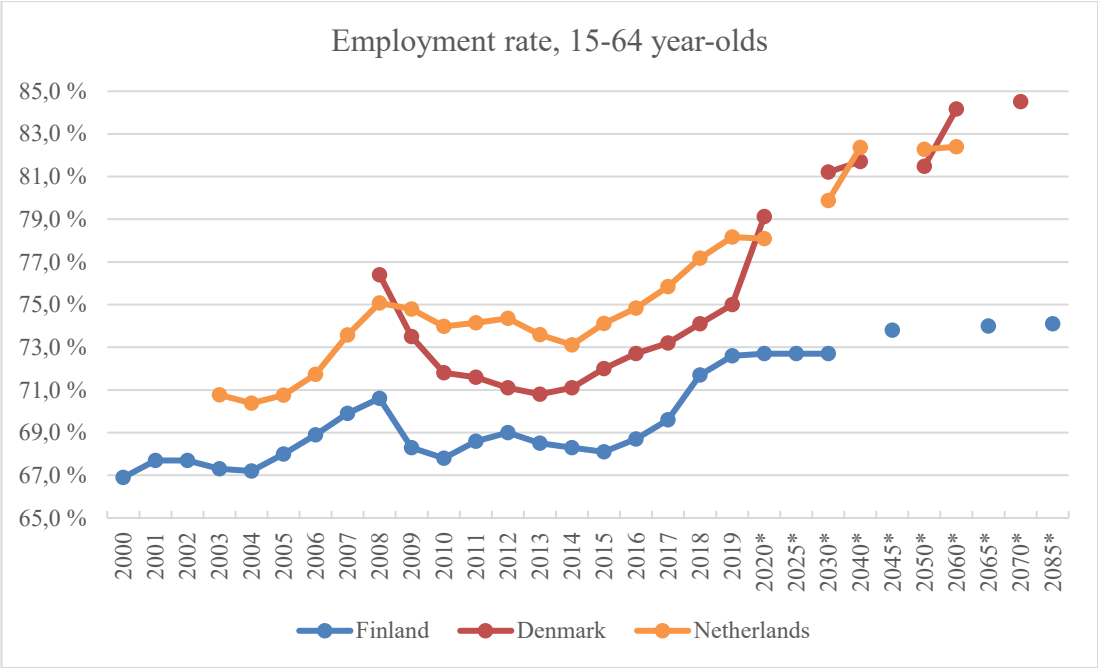


Figure 6: *The Finnish, Danish and Dutch employment rates for 15-64-year-olds* (EC, 2018; Statistics Denmark, 2020; Statistics Finland, 2020a; Statistics Netherlands, 2020a; Tikanmäki *et al.*, 2019). * = EC (2018), Tikanmäki *et al.* (2019) estimates.

Figure 7 presents the old-age dependency ratio (ODR), the number of 65+ year-olds to 15-64-year-olds, and the system dependency ratio (SDR), the number of pensioners to the number of employed (EC, 2018). The SDR in Finland is quite high compared to that in Denmark or the Netherlands in figures 8 and 9, especially in the estimates for the latter half of the century. As the Finnish ERP system is partly funded, the increasing SDR translates to an increasing pressure on the workforce to make relatively higher pension contributions. Pension expenditure as a share of GDP to the ODR is a measure of a pension system's resistance to an aging demographic (Chybalski, 2015). The lower the value, the greater the system's resistance is. The ratio is also higher in Finland compared to Denmark and the Netherlands. However, this is partly due to the higher pension expenditure as a share of GDP in Finland, which itself is due to the ERP system making up most of the pension benefit in Finland. The OP systems in Denmark and the Netherlands make up less than half of the total pension benefit.

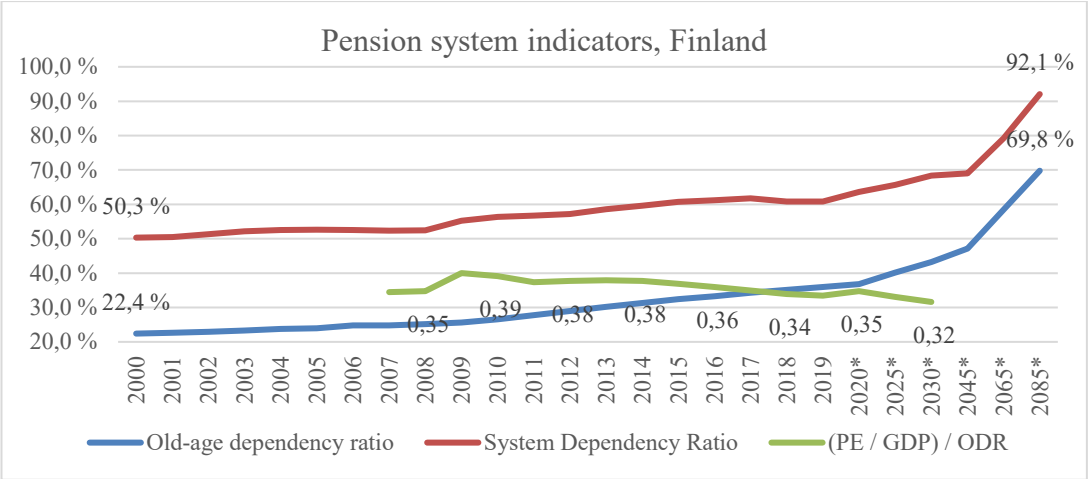


Figure 7: *ODR, SDR, and the pension system's resistance to demographic change, FIN* (FCP, 2020b; MoF, 2020a; Statistics Finland, 2020a; Tikanmäki *et al.*, 2019; own calculations). * = Tikanmäki *et al.* (2019) estimates.

Figure 8 shows the ODR, SDR and pension expenditure as a share of GDP to the ODR for Denmark. All the indicators show lower values than in Finland, an indication of the higher employment rate and more sustainable demographic development in Denmark. The low values for the pension expenditure as a share of GDP to ODR are due to both a more sustainable ODR and lower pension expenditure to GDP, as this comparison only considers the OP system expenditure, not total pension expenditure including public pensions.

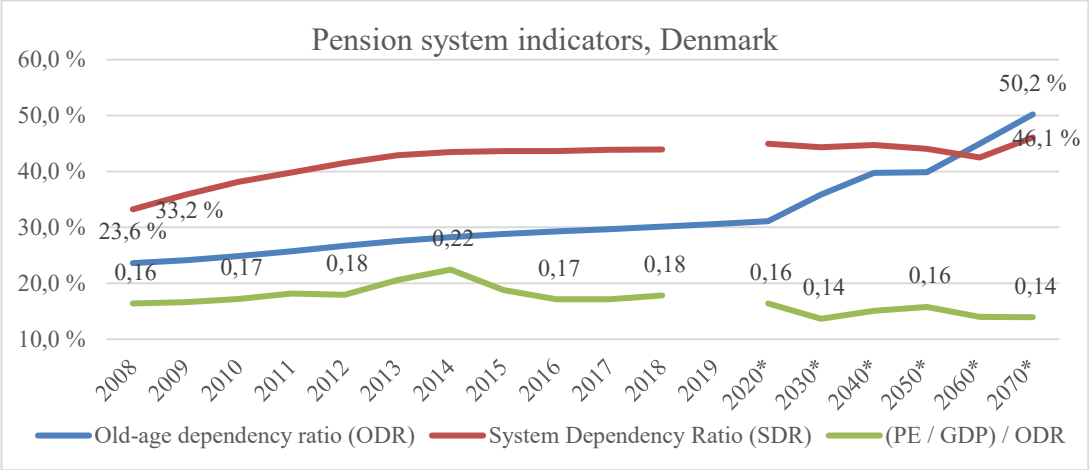


Figure 8: *ODR, SDR, and the pension system's resistance to demographic change, DNK* (EC, 2018; Forsikring og Pension, 2020; Statistics Denmark, 2020; own calculations). * = EC (2018) estimates.

Figure 9 presents the ODR, SDR and the indicator for the OP system's resistance to demographic changes in the Netherlands. The ODR is the lowest of the three in the Netherlands, while the SDR is slightly higher than in Denmark, indicating a higher share of pensioners to the employed. The pension expenditure as a share of GDP to ODR peaks at around 2030, which is due to the expected retirement of large age cohorts, increasing the value of pension benefits paid out temporarily.

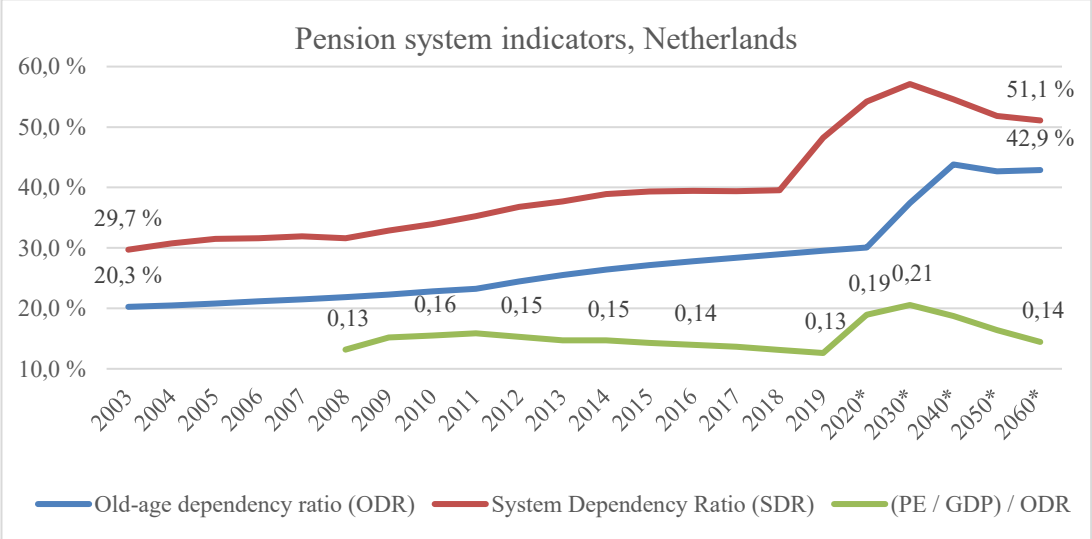


Figure 9: *ODR, SDR, and the pension system's resistance to demographic change, NLD* (EC, 2018; Statistics Netherlands, 2020a; own calculations). * = EC (2018) estimates.

The average effective retirement ages in figure 10 show that after 2013, Finland has fallen behind Denmark and the Netherlands in the sense that workers retire earlier. The average effective retirement age in Finland in 2019 was 64,0 years, while in Denmark it was 65,9 years. EC (2018) made forecasts of the future average retirement age in all three countries, and towards the end of the century, Finland is projected to be catching up again. A higher retirement age enables individuals to accumulate a greater pension in anticipation of increasing life-expectancies, but in Finland it also means workers contribute to paying current pensions for longer, easing the long-term funding prospects of the system. Tikanmäki *et al.* (2019) make forecasts of the expected retirement age for a 25-year-old, which is dragging behind both the realized average effective retirement age and the forecasts, due to mental and other illnesses causing incapacity for work.

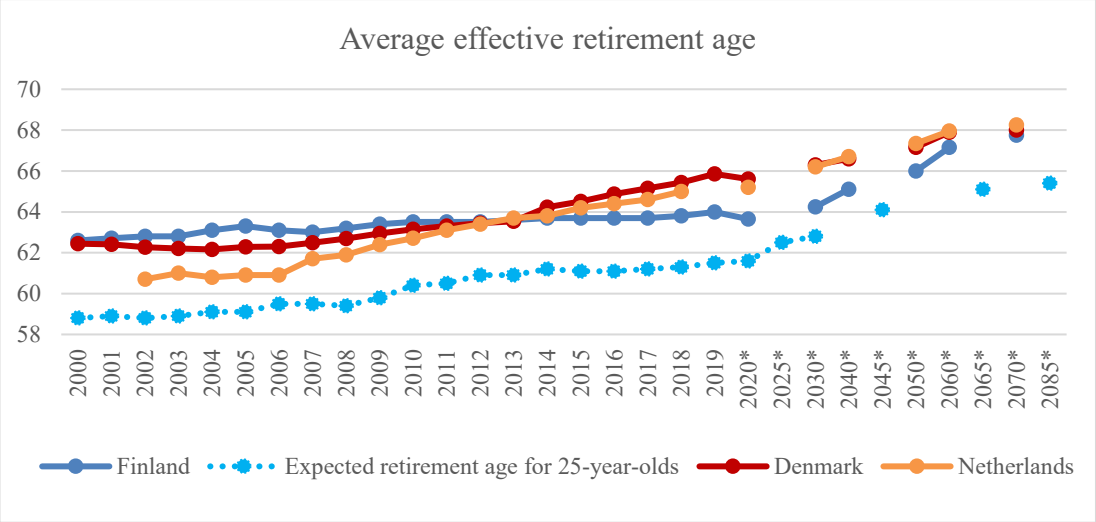


Figure 10: *The average effective retirement ages, expected retirement age in Finland* (EC, 2018; Tikanmäki *et al.*, 2019; FCP, 2020b; Forsikring og Pension, 2020; Statistics Netherlands, 2020b). * = EC (2018), Tikanmäki *et al.* (2019) estimates.

Table 2 shows the gross and net pension replacement rates in Denmark, Finland and the Netherlands at different income levels as calculated by the OECD (2020). The Finnish replacement rates are stable regardless of the income class, and while the Netherlands exhibit a similar pattern, the replacement rates in Denmark are much more progressive depending on the pensioner's earlier income. Replacement rates in Finland are also noticeably lower than in Denmark or the Netherlands, except for the highest paid workers, for whom the net replacement rate edges higher than in Denmark.

| **Earnings level** | | **Denmark** | **Finland** | **Netherlands** |
|---|---|---|---|---|
| 50 % of average wage | Gross | 113,8 % | 56,5 % | 73,5 % |
| | Net | 104,5 % | 65,1 % | 78,0 % |
| 100 % of average wage | Gross | 74,4 % | 56,5 % | 70,9 % |
| | Net | 70,9 % | 64,2 % | 80,2 % |
| 150 % of average wage | Gross | 64,0 % | 56,5 % | 70,1 % |
| | Net | 63,3 % | 64,9 % | 78,5 % |

Table 2: *The 2018 gross and net pension replacement rates at different income levels* (OECD, 2020).

Figure 11 presents the average monthly pension to the average monthly salary in Finland and Denmark. The Netherlands are omitted because no unambiguous record of the average pension was found. The average earnings are from OECD (2020), while

the average pensions are from FCP (2020b) and Statistics Denmark (2020). Figure 11 supports OECD's (2020) figures visible in table 2, in that pensions in Denmark are higher than in Finland.

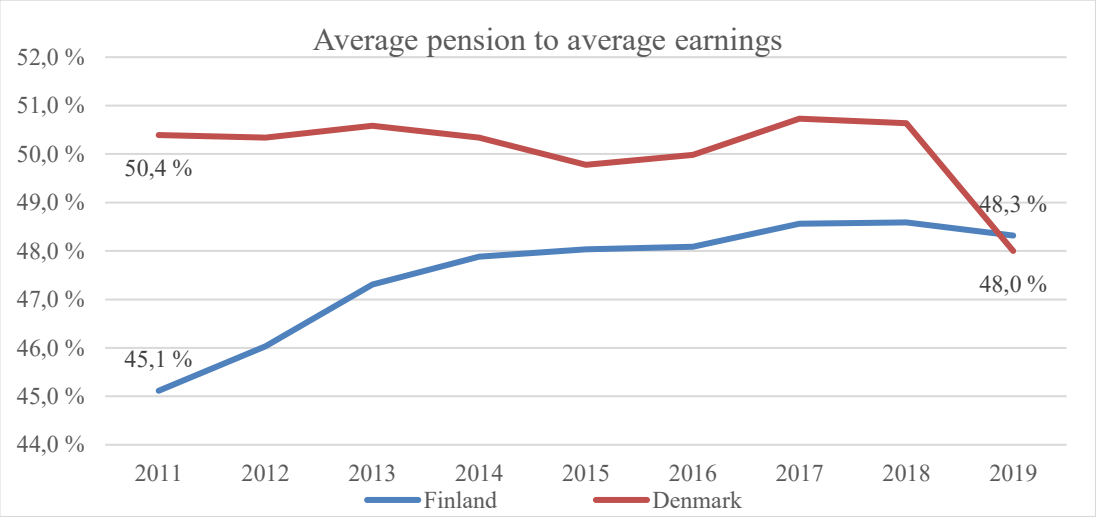


Figure 11: *The Finnish and Danish average pensions to average earnings* (FCP, 2020b; OECD, 2020; Statistics Denmark, 2020; own calculations).

## 3.2 Investments

Figure 12 shows the annual real returns of the Danish and Dutch OP systems and of the Finnish TyEL and JuEL pension funds Elo, Ilmarinen, Varma, Veritas, and Keva and VER. FCP (2020a) provides fund specific real returns in absolute terms, which have been used to calculate the total real return for the funds by weighting. The Finnish funds showcase somewhat more volatile returns. The Danish pension funds have traditionally had a high allocation to fixed-return assets which performed considerably better during the Financial Crisis than stocks and helped the funds avoid greater losses (Aaltonen *et al.*, 2017).

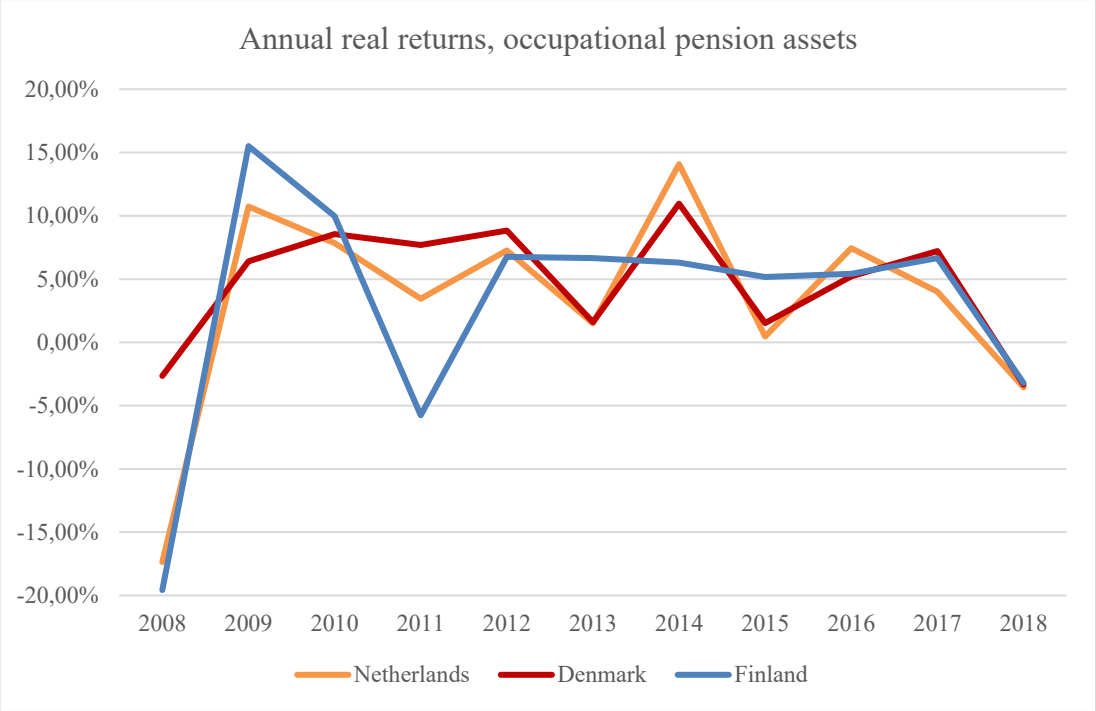


Figure 12: *2008-2018 annual real returns of the Danish and Dutch OP systems and of the Finnish private and public sector ERP funds* (FCP, 2020a; Better Finance, 2019; own calculations).

Table 3 continues by showing the 2014-2018 and 2008-2018 average annual real returns and the cumulative returns over the period for the Danish and Dutch OP systems and the Finnish TyEL and JuEL funds. Finland is lagging behind in the average annual real returns, although the cumulative returns over the period are quite close to those of the Netherlands'.

**Real returns p.a.**

| Year | Netherlands | Denmark | Finland |
|---|---|---|---|
| 2014-2018 | 4,49 % | 4,32 % | 4,06 % |
| 2008-2018 | 3,26 % | 4,73 % | 3,08 % |
| Cumul. 2008-2018 | 35,87 % | 52,02 % | 33,90 % |

Table 3: *2008-2018 average annual and cumulative real returns of the Danish and Dutch OP systems and the Finnish private and public sector ERP funds* (FCP, 2020a; Better Finance, 2019; own calculations).

Table 4 shows the fund-specific real returns over 2015-2019 and 2010-2019 of the Finnish TyEL and JuEL funds in blue, five of the Netherlands' largest pension funds in orange, and the first-pillar ATP of Denmark with four other largest pension funds in Denmark in red. The four Finnish TyEL funds, Elo, Ilmarinen, Varma and Veritas, are bound by solvency capital requirements, unlike the public sector Keva and VER. The public sector funds have achieved 0,29 – 1,01 %-points higher average annual real returns over 2010-2019 than their private sector counterparts bound by stricter capital requirements. All the pension funds present from Denmark and the Netherlands, except ATP, are also bound by solvency capital requirements yet have managed considerably higher annual returns than either types of funds in Finland.

**Real returns p.a., fund specific**

| | 2015-2019 | 2010-2019 |
|---|---|---|
| Elo | 5,26 % | 4,71 % |
| Ilmarinen | 5,04 % | 4,60 % |
| Varma | 4,70 % | 4,61 % |
| Veritas | 5,12 % | 4,73 % |
| Keva | 5,34 % | 5,61 % |
| VER | 5,08 % | 5,02 % |
| ABP | 5,46 % | 6,83 % |
| PFZW | 5,66 % | 7,17 % |
| PME | 5,35 % | |
| PMT | 5,87 % | |
| bpfBOUW | 6,31 % | |
| ATP | 5,98 % | 9,08 % |
| PFA Pension market rate products | 5,52 % | 6,51 % |
| Danica Pension market rate products | 5,02 % | 5,62 % |
| PensionDanmark | 5,66 % | |
| Velliv Pension | 6,26 % | |

Table 4: *Company specific average annual returns, 2010-2019* (bpfBOUW, 2020; Danica Pension, 2020; FCP, 2020a; PensionDanmark, 2020; PFA Pension, 2020; PME, 2020; PMT, 2020; Velliv Pension, 2020; own calculations).

Figure 13 shows the asset allocation of all Finnish pension assets over 1999-2019 (TELA, 2020). The share of equities and equity funds has increased through the period to 57,8 % at year-end 2019, leading to an allocation remotely reminiscent of a 60/40 distribution. The Finnish law places an upper limit of 65 % to equity allocation for private sector pension funds to limit excessive risk-taking, and though most funds have increased their equity allocations, the public sector pension funds and indirect equity investments through funds push the overall statistics higher.

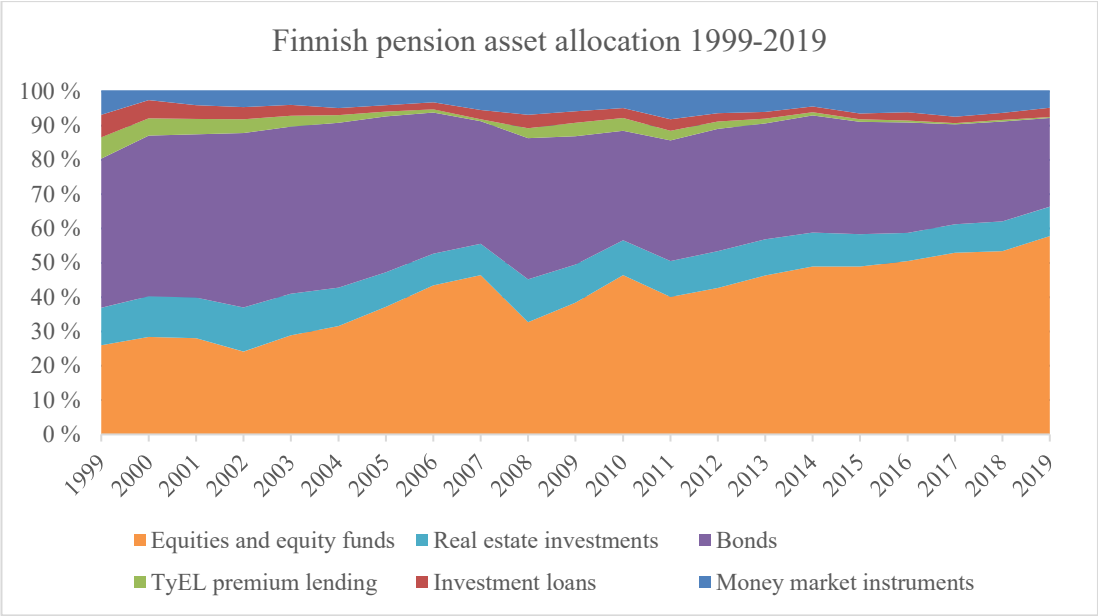


Figure 13: *Finnish pension asset allocation 1999-2019* (TELA, 2020).

Figures 14 and 15 (Forsikring og Pension, 2020) show Danish pension funds have traditionally placed a significant allocation into fixed-income instruments. However, the allocation into the other assets class, which includes the assets of market-rate or DC pension schemes, has increased considerably, and constituted 39,7 % of all assets at year-end 2018. The increase is due to an on-going shift from average-rate, or DB, to market-rate pension products, a result of the persistent low-interest rate regime and rising life-expectancy (DKNB, 2020).

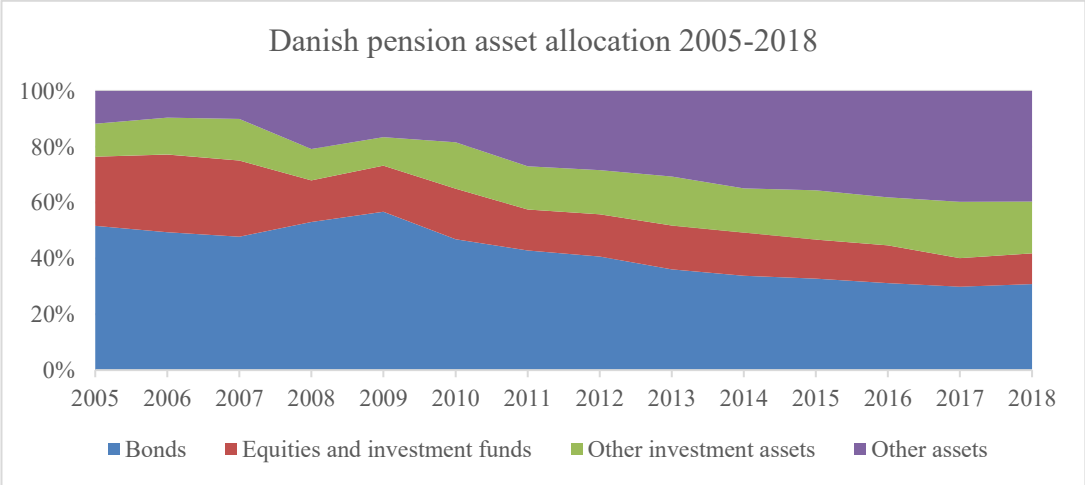


Figure 14: *Pension asset allocation for Danish life-insurance and pension companies 2005-2018* (Forsikring og Pension, 2020).

The asset allocation of market-rate pension funds is not disclosed in detail by Forsikring og Pension or the Danish Financial Supervisory Authority (DFSA). The volume of assets has increased considerably in the period as the Danish OP system is not yet mature, meaning contribution income is greater than paid benefits (Jensen *et al.*, 2019a). Figures 14 and 15 (Forsikring og Pension, 2020) include the pension assets of life-insurance companies, sectoral and company pension funds, ATP, the special pension savings scheme (SP) and LD Pensions, and are thus comparable to the Finnish ERP system's assets, and are in accordance with DKNB's definitions of life-insurance companies and pension funds (DKNB, 2019).

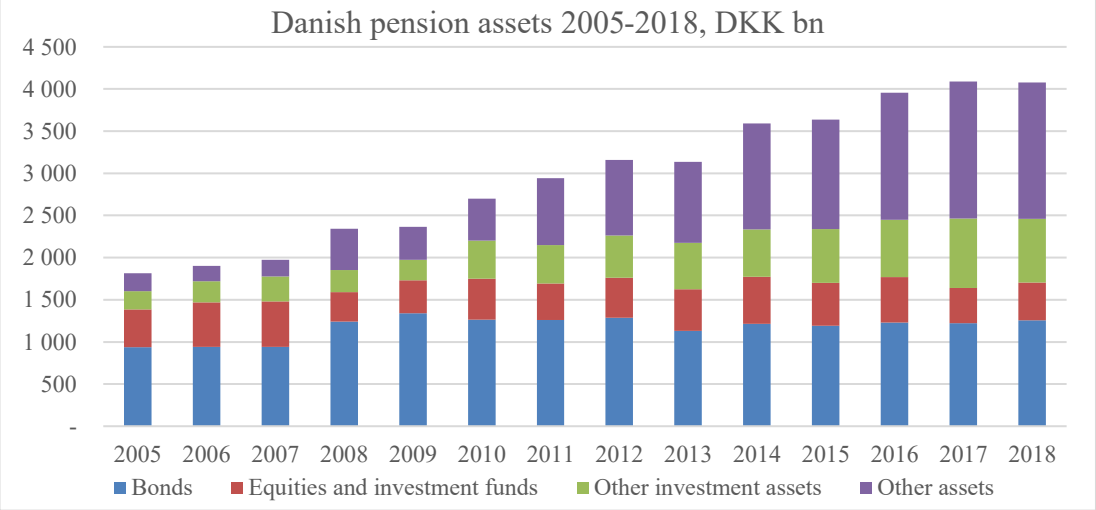


Figure 15: *Pension assets of Danish life-insurance and pension companies in DKK bn, 2005-2018* (Forsikring og Pension, 2020).

DKNB (2019) reports that at the end of 2019Q3, the sector had allocated approximately 43,8 % into fixed-income, 27,8 % into equities, and 28,4 % into investment funds. The investment funds have also invested in fixed-income and equities, and with look-through the allocations are approximately 56,3 % in fixed-income and 38,5 % in equities, the rest in further investment funds (ibid.). At year-end 2019, the life-insurance and pension sector's combined assets were DKK 4 521,95 bn, standing at 194,8 % of GDP, while provisions were DKK 3 888,89 bn, or 167,5 % of GDP (Statistics Denmark, 2020). Provisions are the capital the companies must reserve to meet benefit commitments – in case of average rate products, it is the capital needed

to meet guaranteed commitments, and in case of market rate products, it is the market value of the assets (DKNB, 2019).

Figure 16 shows the Dutch pension industry has placed a heavy allocation into equities, 59,6 % on average. Dutch pension funds have no regulation-imposed upper limits to equity allocations, but the funds must keep their funding ratios above certain limits to avoid having to make plans for improving their financial status, to increase contribution rates, or to make benefit cuts (DNB, 2020b).

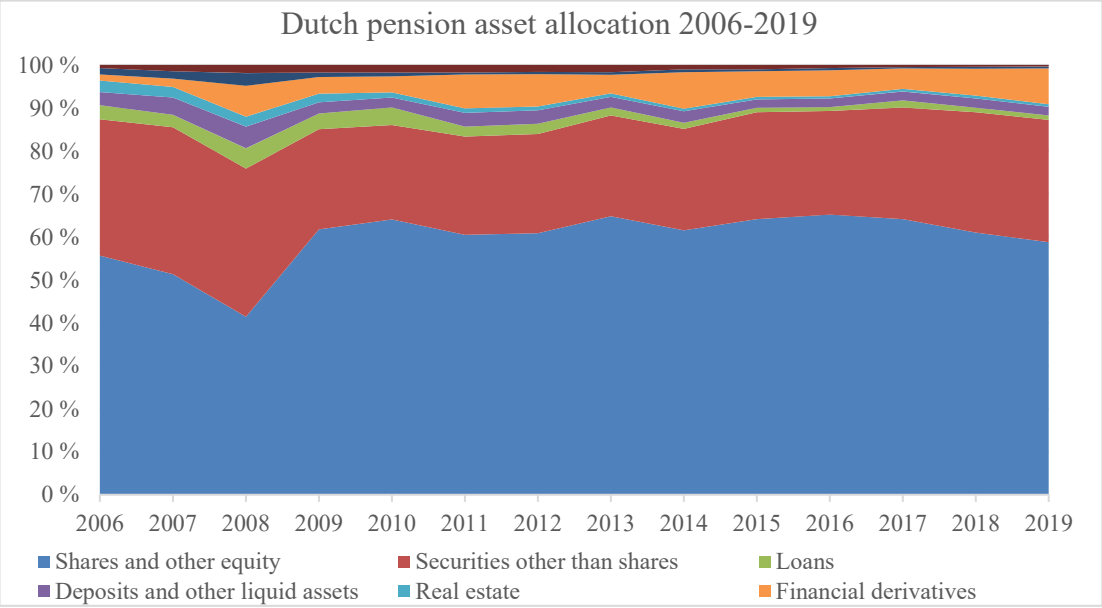


Figure 16: *Dutch pension asset allocation 2006-2019* (DNB, 2020a).

Table 5 presents the fund-specific asset allocations of the largest pension funds in Denmark, Finland, and the Netherlands in 2019. Different from what the total asset allocation data in figures 13, 14 and 16 suggested, the Finnish pension funds have the largest direct allocations into equities. Further equity investments are made through investment funds, which are included in the Other asset class. Table 5 also shows the higher allocations into fixed-income assets for the Danish and Dutch funds.

**2019 asset allocation, fund-specific**

| | Equity | Fixed-income | Other |
|---|---|---|---|
| PMT | 29,4 % | 61,5 % | 9,1 % |
| PME | 37,5 % | 57,1 % | 5,4 % |
| bpfBOUW | 25,4 % | 33,5 % | 41,2 % |
| ABP | 36,3 % | 33,3 % | 30,3 % |
| PFZW | 30,9 % | 40,4 % | 28,7 % |
| PFA Pension | 28,1 % | 58,6 % | 13,3 % |
| ATP | 13,6 % | 65,5 % | 20,9 % |
| Danica Pension | 25,7 % | 44,0 % | 30,3 % |
| PensionDanmark | 36,3 % | 41,1 % | 22,6 % |
| Velliv Pension | 16,0 % | 34,3 % | 49,7 % |
| Ilmarinen | 47,0 % | 33,7 % | 19,3 % |
| Varma | 46,2 % | 26,6 % | 27,2 % |
| VER | 51,4 % | 38,0 % | 10,6 % |
| Keva | 53,2 % | 22,0 % | 24,8 % |
| Elo | 48,4 % | 32,3 % | 19,3 % |
| Veritas | 39,7 % | 36,3 % | 23,9 % |

Table 5: *Allocations of the largest pension funds in Denmark, Finland and the Netherlands* (bpfBOUW, 2020; Danica Pension, 2020; FCP, 2020a; PensionDanmark, 2020; PFA Pension, 2020; PME, 2020; PMT, 2020; Velliv Pension, 2020; own calculations).

The Danish pension funds, except ATP, have a solvency capital requirement similar to that in Finland: the funds must be able to meet obligations to policyholders over the next 12 months with a minimum probability of 99,5 % (Finanstilsynet, 2017). In Finland the private sector pension funds have a solvency capital requirement of being able to cover potentially realizing risks over the next 12 months with a 97 % minimum probability (FCP, 2020a). The funding ratio in the Netherlands measures the pension funds' health: with a ratio above 110 %, the fund is healthy and can apply index-linked increases to pension benefits; with a ratio of 104 – 110 %, indexation must be ceased; and with a ratio below 104 %, the funds must take action to remedy their financial position (DNB, 2020b). Table 6 presents the solvency ratios of the Finnish TyEL funds and the four largest Danish OP funds, and the funding ratio of the five largest Dutch pension funds. Both the Danish and Dutch OP systems are fully funded, yet the Dutch funds lag far behind their Danish counterparts in financial health.

**Funding ratios, fund-specific**

| | 2015 | 2016 | 2017 | 2018 | 2019 | 2015-2019 avg. |
|---|---|---|---|---|---|---|
| **Elo** | 124 % | 124 % | 126 % | 121 % | 124 % | 124 % |
| **Ilmarinen** | 130 % | 129 % | 131 % | 124 % | 127 % | 128 % |
| **Varma** | 131 % | 131 % | 134 % | 128 % | 131 % | 131 % |
| **Veritas** | 128 % | 130 % | 132 % | 126 % | 127 % | 129 % |
| **PFA Pension** | 302 % | 285 % | 215 % | 286 % | 247 % | 267 % |
| **Danica Pension** | 201 % | 249 % | 228 % | 203 % | 198 % | 216 % |
| **PensionDanmark** | 357 % | 378 % | 418 % | 424 % | 362 % | 388 % |
| **Velliv Pension** | 163 % | 164 % | 179 % | 183 % | 161 % | 170 % |
| PME pensioen | 96 % | 96 % | 102 % | 98 % | 99 % | 98 % |
| PMT pensioen | 98 % | 97 % | 102 % | 99 % | 99 % | 99 % |
| bpfBOUW | 109 % | 111 % | 118 % | 114 % | 114 % | 113 % |
| ABP | 97 % | 97 % | 104 % | 97 % | 98 % | 99 % |
| PFZW | 95 % | 95 % | 101 % | 97 % | 99 % | 97 % |

Table 6: *The funding ratios of the largest Danish and Dutch pension funds and the solvency rate of the Finnish TyEL funds* (bpfBOUW, 2020; Danica Pension, 2020; FCP, 2020a; PensionDanmark, 2020; PFA Pension, 2020; PME, 2020; PMT, 2020; Velliv Pension, 2020; own calculations).

## 3.3 MMGPI scores

MMGPI (2019) ranks pension systems based on three sub-indices: adequacy, sustainability, and integrity. Adequacy makes up 40 % of the final grade and considers the level of benefits provided and facts about household wealth as indicators of financial security in retirement. Sustainability makes up 35 % of the grade and considers the long-term financial sustainability of the pension system. Integrity makes up the final 25 % of the grade and considers the pension system's regulation and governance; protection and communication for members; and operating costs. Each indicator has a possible score of 0 – 10 points and each indicator is weighed differently as seen fit by MMGPI (ibid.). As the focus of this thesis is on the sustainability of the Finnish ERP system, the focus here will be on the sustainability sub-index and its scoring.

Table 7 shows the adequacy sub-index scores of Denmark, Finland, and the Netherlands. Denmark ranks 4th, Finland 7th and the Netherlands 3rd in the sub-index. The indicators Finland loses the most against Denmark and the Netherlands are the minimum pension as a percentage of the average wage a retiree will receive as benefits;

the net replacement rate for a range of income earners; and the consideration of individuals' accrued pension assets in the division of assets in case of a couple's divorce or separation (MMGPI, 2019).

Table 8 covers the sustainability sub-index. Denmark ranks 1st, Finland 10th and the Netherlands 2nd in sustainability. Finland loses against Denmark and the Netherlands the most in funding level-associated indicators. The level of public debt, economic growth figures, and the total fertility rate and projected 2040 old-age dependency ratio set Finland back further. The sustainability scoring in MMGPI (2019) favors funded pension systems, based on the argument of fully funded pension systems more likely being able to meet payments in the future. The Finnish ERP system is at a disadvantage with its partial funding, as roughly only one third of pension liabilities are funded.

MMGPI (2019) recommends Finland to improve the labor force participation among older ages and to increase the level of contributions. Higher contributions would allow a higher funded level of assets, which would increase the likelihood of being able to make benefit payments in the future and allow for greater investment assets to accumulate returns on, further easing the Finnish ERP system's financial position.

| Adequacy | | Denmark | Finland | Netherlands |
|---|---|---|---|---|
| 1) (17,5 %) | What is the minimum pension, as a percentage of the average wage, that a single person will receive?<br><br>How is the minimum pension increased or adjusted over time? Are these increases or adjustments made on a regular basis? | 10,0 | 5,4 | 8,4 |
| 2) (25,0 %) | What is the net replacement rate for a range of income earners? | 10,0 | 9,1 | 9,6 |
| 3) (10,0 %) | What is the net household saving rate in the country?<br><br>What is the net household debt to GDP ratio? | 1,1 | 3,3 | 2,7 |
| 4) (5,0 %) | Are voluntary member contributions made by a median-income earner to a funded pension plan treated by the tax system more favorably than similar savings in a bank account?<br><br>Is the investment earned by pension plans exempt from tax in the pre retirement and/or post retirement periods? | 4,0 | 7,0 | 10,0 |
| 5) (10,0 %) | Is there a minimum access age to receive benefits from the private pension plans (except for death, invalidity and/or cases of significant financial hardship)?<br><br>If so, what is the current age? | 10,0 | 10,0 | 5,0 |
| 6) (10,0 %) | What proportion, if any, of the retirement benefit from the private pension arrangements is required to be taken as an income stream?<br><br>Are there any tax incentives that exist to encourage taking up of income streams? | 6,7 | 7,5 | 7,5 |
| 7) (7,5 %) | On resignation from employment, are plan members normally entitled to the full vesting of their accrued benefit?<br><br>After resignation, is the value of the member's accrued benefit normally maintained in real terms (either by inflation-linked indexation or through market investment returns)?<br><br>Can a member's benefit entitlements normally be transferred to another private pension plan on the member's resignation from an employer? | 10,0 | 10,0 | 10,0 |
| 8) (4,0 %) | Upon a couple's divorce or separation, are the individuals' accrued pension assets normally taken into account in the overall division of assets? | 0,0 | 0,0 | 10,0 |
| 9) (5,0 %) | What is the level of home ownership in the country? | 5,4 | 6,4 | 6,1 |
| 10) (5,0 %) | What is the proportion of total pension assets invested in growth assets? | 10,0 | 10,0 | 10,0 |
| 11) (1,0 %) | Is it a requirement that an individual continues to accrue their retirement benefit in a private pension plan when they receive income support such as a disability pension or on paid maternity leave? | 0,0 | 10,0 | 0,0 |
| | Adequacy sub-index | 77,5 | 73,2 | 78,5 |

Table 7: *Adequacy sub-index indicators* (MMGPI, 2019).

| Sustainability | | Denmark | Finland | Netherlands |
|---|---|---|---|---|
| 1) (20,0 %) | What proportion of the working age population are members of private pension plans? | 10,0 | 10,0 | 10,0 |
| 2) (15,0 %) | What is the level of pension assets, expressed as a percentage of GDP, held in private pension arrangements, public pension reserve funds, protected book reserves and pension insurance contracts? | 10,0 | 4,0 | 10,0 |
| 3) (20,0 %) | What is the current gap between life expectancy at birth and the state pension age? What is the projected gap between life expectancy at birth and the state pension age in 2040? (This calculation allows for mortality improvement.) What is the projected old-age dependancy ratio in 2040? What is the Total Fertility Rate (TFR) averaged over 2015-2020? | 6,2 | 4,3 | 5,1 |
| 4) (10,0 %) | What is the level of mandatory contributions that are set aside for retirement benefits (i.e. funded), expressed as a percentage of wages? These include mandatory employer and/or employee contributions towards funded public benefits (i.e. social security) and/or private retirement benefits. | 10,0 | 3,9 | 10,0 |
| 5) (10,0 %) | What is the labor force participation rate for those aged 55-64?<br><br>What is the labor force participation rate for those aged 65+? | 7,2 | 6,5 | 6,7 |
| 6) (10,0 %) | What is the level of adjusted government debt (being the gross public debt reduced by the size of any sovereign wealth funds that are not set aside for future pension liabilities), expressed as a percentage of GDP? | 7,7 | 5,9 | 6,2 |
| 7) (5,0 %) | In respect of private pension arrangements, are older employees able to access part of their retirement savings or pension and continue working (e.g. part time)?<br><br>If yes, can employees continue to contribute and accrue benefits at an appropriate rate? | 10,0 | 10,0 | 10,0 |
| 8) (10,0 %) | What is the real economic growth averaged over the last four years and projected for the next three years? | 4,9 | 4,7 | 5,1 |
| | Sustainability sub-index | 82,0 | 60,7 | 78,3 |

Table 8: *Sustainability sub-index indicators* (MMGPI, 2019).

The first sustainability indicator awards full points for coverage of 80 % or above. The indicator is given a relatively large weight based on a high coverage rate increasing a system's future sustainability and reducing pressure on government social security spending. The second indicator awards full points for funded pension assets of 175 % of GDP or above. The second indicator includes assets held in private and public schemes and its weight is also quite large, as the size of assets set aside is deemed a good indicator of a pension system's ability to meet future payments. The third indicator has four questions and their average forms the indicator score. The weight is large since four questions are covered under a single indicator. A later retirement age is favored to reduce pressure on the size of needed funds for making payments under an increasing life-expectancy, and a high TFR helps with the score – immigration is believed to be only a short-term patch on low fertility. The fourth indicator awards points for the net funded level of mandatory contributions as a percentage of earnings

– funded contributions of 12 % or more award full points. Indicator five supports higher labor force participation at older ages, which translates to retirement starting later and a reduced level of benefits needed, while enabling higher accumulated savings. Indicator six awards full points for adjusted government debt of zero % of GDP and a zero score for adjusted government debt of 150 % of GDP or more. The argument is that high government debt increases the chances of reductions in the level or coverage of social security benefits. Indicator seven supports a system where retirees may gradually phase into retirement and decrease their workload, while continuing to contribute and accrue benefits. The eighth indicator gives points for real economic growth, the argument being that real economic growth will improve the pension system's sustainability as its financial position is improved along with the entire host-economy (MMGPI, 2019).

# 4 POLICY DISCUSSION IN FINLAND

## 4.1 Demographic and economic developments as the basis

The aging of populations and decreasing fertility rates are problems common to most developed economies and threaten pension systems also, leading to active policy discussions. Nopola & Tikanmäki (2020) suggest the current record-low fertility in Finland is due to the postponement of having children, and that after the postponement ends due to biological limits, fertility will rise, providing pension funding some long-term relief. Aaltonen *et al.* (2017) assert the Finnish ERP system's sustainability is based on the assumptions of balanced demographic developments; adequate economic growth, productivity, and high employment; and decent investment returns, and that these measures are under threat. Pikkarainen (2017) asserts the sustainability of the ERP system depends primarily on the Finnish economy's success and adaptation to global economic shocks, instead of investment returns.

Mielonen (2020) asserts that employment developments are crucial for the funding of a partially funded pension system such as in Finland. Aaltonen *et al.* (2017) assert that a 1,3 % annual growth in GDP only suffices to maintain current unemployment. Reipas (2019) estimates the employment rate in Finland in 2025 at 72,7 % and expects it to grow to 73,8 % by 2045 and then slowly up to 74,1 % by 2085. Statistics Finland (2020b) reports the March 2020 employment rate trend at 72,9 %, down from 73,0 % in February, and the factual employment rate at 71,3 %, down from 71,8 % in March 2019. Kautto (2020b) and Kiander (2020) anticipate the employment rate to shrink more following the COVID-19 pandemic. Varma (2020) notes that employment had been developing positively for several years with economic growth, but the growth weakened in 2019, and that the current employment rate is not enough to finance the expenses of a welfare state in a sustainable manner. Riekhoff (2019) notes that the employment rates among the older working population in Finland, especially for men, are lagging behind other Nordics. Barr (2013) discusses the same issue and suggests limiting the dependency of the national and guarantee pensions on accrued pension rights for workers starting their careers late or who have been aside from employment

for a long period to serve as an incentive to seek employment. The required funding could be achieved by considering not only the income but also wealth of the national and guarantee pension recipients, thus limiting the number of recipients.

The aging of the population, increasing life-expectancy and low fertility rates will lead to more pensioners in relation to the employed, creating pressure to increase the 24,4 % contribution rate for a relatively smaller population of employed in the future. Tikanmäki *et al.* (2019) estimate the contribution rate to increase to around 25 % by the end of the 2020s. A sustainable long-term contribution rate in the private sector would be 26,7 %, given the change was implemented immediately, and 27,6 % in the public sector (ibid.). The assumptions are based on an employment rate of 73,4 % by 2025 and on average 73 % there onwards. Nopola & Tikanmäki (2020) consider a newer demographic forecast and, depending on the fertility rate, assert the sustainable contribution rate is likely in the range of 24,6-26,6 % in the private sector and 25,4-27,4 % in the public sector.

The Family Federation of Finland (Väestöliitto) (2020) published a report on the effects of low fertility, the decreasing population and the increasing dependency ratio on the Finnish economy and the ERP system. Väestöliitto calls for an active population policy to support increases in the total fertility rate. The low total fertility is said to affect the pension systems more than public finances, yet Väestöliitto asserts that the magnitude of future investment returns is even more significant for the long-term funding sustainability of the Finnish ERP system than demographic factors. In the long run, low fertility means both the income and paid benefits in the pension system decrease. What is felt sooner however, is the considerable increase of the pensioner population compared to the employed population. This creates pressure to increase the TyEL contribution rate for those employed. Väestöliitto (ibid.) states that increasing employment participation would help the funding position of the ERP system over a period of a few decades but cannot neutralize the effect of expected demographic changes. If the total fertility rate of 1,8 that Finland had at the start of the 2000s could be returned, the challenges presented by demographic changes to the ERP system would mostly be solved (ibid.).

Employers oppose raising the contribution rate further to avoid a loss of competitiveness. The demographic change is projected to increase the costs of pension provision at a faster rate than before, in part due to retiring people on average having earned higher incomes than before. In 2019 the number of people receiving ERP benefits grew by 20 000, while the average beginning old-age pension was €60 / month higher than a year before, leading to pension provision costs increasing by €1 bn without increases made in the benefits (Kautto, 2020a). The growth rate is projected to continue through the 2020s, with the number of pensioners growing by 200 000 from the current 1,48 million. The annual contribution income in the Finnish ERP system has been below the level of paid benefits since 2009, leading to an increasing role of funded pension assets and achieved returns in funding the system. (FCP, 2020a; Kautto, 2020a; Siimes, 2020).

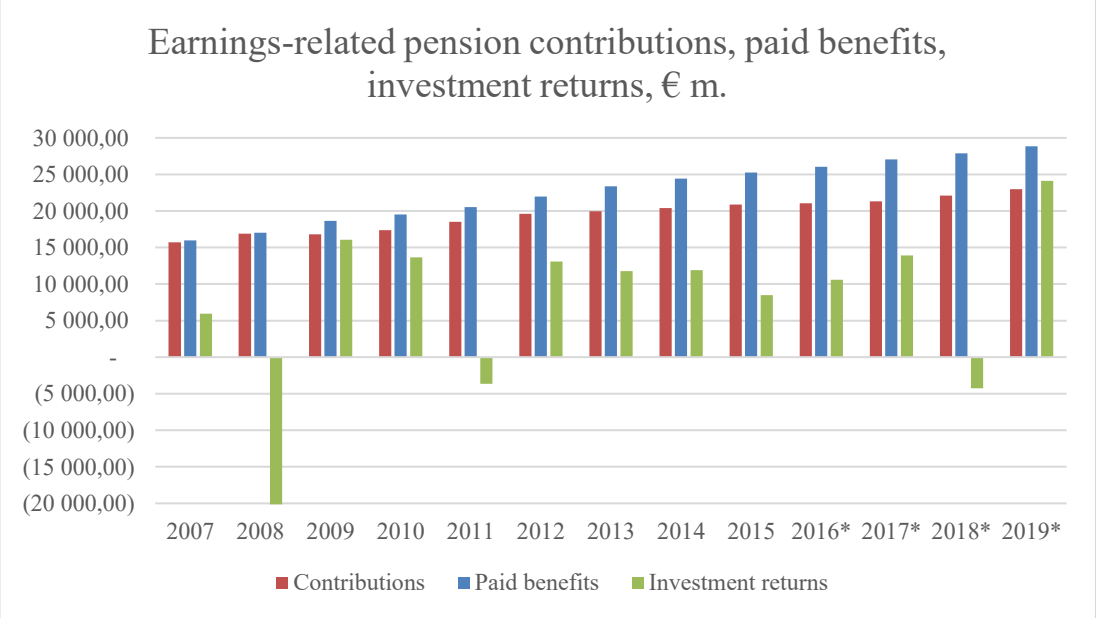


Figure 17: *Earnings-related pension income and expenses, € m* (FCP, 2020b).

Gruber *et al.* (2019) show an increase of up to 40 % in retirement decisions in 2005 when the minimum retirement age dropped from 65 to 63 years, despite the accrual rate between 63-68 years increasing, indicating that workers often retire at the earliest possibility. In 2017, the minimum retirement age began to rise gradually, the 1962 cohort being the first with a minimum age of 65 again, and the minimum age being

tied to life expectancy for cohorts from 1965 onwards (FCP, 2020a). Barr (2013) supports creating further incentives for postponing retirement from the earliest possible date and suggests age-dependent pension right accrual. Jensen *et al.* (2019b) also support enabling age-dependent pension saving profiles, including choice over the timing and risk profile of savings.

The Finnish social and health care sector has been under reform-aspirations for a long time and partly in anticipation the Ministry of Social Affairs and Health (STM) drafted a report on combining the public and private ERP systems. STM (2019) set out to review if combining the systems is possible and indeed worthwhile. The underlying philosophy is that a reform of the social and health sectors is likely to cause a shift in employment from the public sector to the private, undermining the funding of the public pension system. Another point is that abolishing the division would allow pension funds to compete for clients across sectors and pension systems would not play a role in the production of public services. STM (ibid.) suggests the public sector pension company Keva be split in two in the process, creating a new "TyEL-Keva" to administer pension rights the same way as the current private sector pension companies, and leaving "public-Keva" in existence to administer public pension rights with benefits above the TyEL level. Public sector employees born before 1972 may have such higher benefits. Keva is to pay a neutralizing lump sum of approximately €10,5 bn into the private sector TyEL system to offset the higher costs of the public pension system due to the older age of the insured and pensioners and public sector employees on average living longer (ibid.). Preparations are underway and the joining is to take effect in 2027 (ibid.; Ilmarinen, 2020).

### 4.2 Investments and funding

Koivurinne (2018) comments on the Finnish pension companies' domestic investment focus and asserts that the traditionally high degree of domestic investments is good for the domestic economy and employment but goes against modern portfolio theory and increases risk should the domestic economy face a downturn. FCP (2020a) shows the share of domestic investments has been decreasing for years and currently stands at

23,4 %. Investment returns are increasingly important as the pension system's income from contributions is permanently net negative (Siimes, 2020). A percentage point's change in investment returns causes a change pressure of two percentage points in contribution rates (Aaltonen *et al.*, 2017; Vaittinen, 2019). The average real investment return over 1997-2019 has been 4,2 % for private sector pension funds and 4,6 % for public sector funds (TELA, 2020).

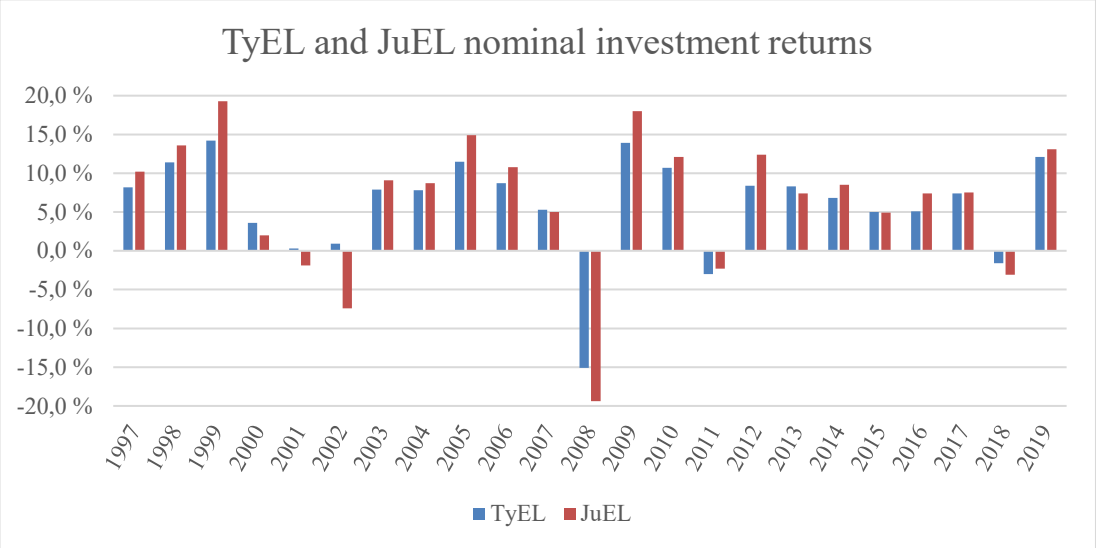


Figure 18: *TyEL and JuEL nominal investment returns* (TELA, 2020).

Rantala (2020) notes that expectations of future investment returns have decreased in Finland, and that the IMF has expressed worry over pension funds' investments becoming more illiquid and homogenous, which could lead to simultaneous actions by institutional investors precipitating instability in the markets. Aaltonen *et al.* (2017) reported that Finnish pension funds had investment return correlations of 0,94 – 1,00, showing some evidence of the worry of homogeneity of pension fund investments in Rantala (2020). Rantala (ibid.) asserts the stock allocations for Finnish private sector pension funds operating with solvency capital requirements have been 30 – 45 %, while public sector funds without solvency capital requirements have had stock allocations 10 percentage points higher, with a similar trend internationally. He maintains that in Finland the public sector funds have consistently achieved 0,5 – 1,0 percentage points higher annual investment returns over 2008-2018, depending on the sample period. No similar international trend is found however (ibid.).

The private sector pension companies have a minimum return requirement of 3 %, which is the rate pension funds must be topped annually. Together with the fund-increasing supplementary factor, the actual return requirement is 4,05 % starting 1 January 2020 and has been 3,68 – 5,28 % over the past five years. Considering the prevailing low-interest rate regime has continued for years, Rantala (2020) finds that the return requirements and the level of risk allowed for pension funds regulation-wise are in conflict. Rantala (ibid.) maintains that the high return requirement together with strict solvency requirements automatically leads to the funds' solvency capital decreasing, since the requirements must be met with solvency capital in case of poor returns. The return requirement cannot be achieved with low-risk interest rate instruments like before, while higher-risk instruments bind more solvency capital and make operations riskier. At the same time, the present-value of pension liabilities has increased considerably due to applicable discount rates in the prevailing interest regime – effectively, pension provision has become more expensive (ibid.).

Aaltonen *et al.* (2017) suggest a comprehensive reform of the Finnish ERP system. The suggested reform holds that earnings-related pensions would remain mandatory and have a uniform "pension floor", a level up to which everyone is required to save in a similar-to-current fashion. The individual would have power over how to save above the minimum level – as a default option to continue saving in the common system, or to decide their saving and risk profile more freely. Taxes from pension contributions would remain backloaded while pension asset funding would be increased 25 – 50 % from the current levels. The suggestion includes greater individual choice over the timing of pension saving and retirement, that savings above the minimum level could be withdrawn before retirement, that the solvency capital requirement be dropped and that a higher level of investment expertise be required of pension fund supervisory board members as suggested by FIN-FSA (ibid.).

Aaltonen *et al.* (2017) assert removing the solvency capital requirement would enable long-term return-oriented investing, and that the pension funds' investment returns would annually be on average 2 percentage points higher than currently. The authors also suggest pension funds be assigned a 60/40 equity-fixed income portfolio to follow

with strict tracking error limits to limit risk-taking. The authors admit pension funds would end up with similar investment portfolios, but counter by asserting that the funds already have investment portfolios with highly correlating returns. Factor investing is also suggested as a means to strive for higher returns. Aaltonen *et al.* (ibid.) support combining all the public and private sector pension companies into one, asserting the operation could lead to annual administration cost savings of €400 m.

Pikkarainen (2017) supports the suggestion by Aaltonen *et al.* (2017) to implement stricter investment expertise requirements on the supervisory board members of both the public and private pension companies, and suggests employees, pensioners and the small-and-medium sized company sector be better represented in the boards. Pikkarainen (2017) resists combining all the Finnish pension companies into one. He argues the move would have negative implications for the broader economy: the diminishing number of investment professionals, making it harder for banks and other firms to find skilled labor; a significant outflow of capital from the Finnish financial markets, since markets are not perfect and international investors would have weaker signals of the Finnish financial market's direction; and a weakening of the diversity of the Finnish financial markets, as there would be fewer agents estimating the risk profiles of undertakings. The negative effects that follow are likely greater than the gains from administration cost savings resulting from combining the organizations. Barr (2013) supports the system of multiple pension funds by arguing that no one fund gains overt market power and there is less chance of political influence on investment decisions. Pikkarainen (2017) agrees with Aaltonen *et al.* (2017) that it is unfortunate the Finnish pension funds' investment portfolios have become so homogenous.

Rantala (2020) suggests relinquishing the fixed discount rate in setting the return requirement in the private sector pension system in favor of a market-based discount rate. Rantala admits the solvency capital requirements limit investment risk-taking and affect allocations. However, he defends the solvency capital requirements on the basis of the joint liability of the pension funds – without the requirement, a single fund might take on risks that would end up being borne by the greater society. STM (2019) also supports upholding the solvency capital requirement due to the joint liability of the

pension funds, and argues that should a pension fund fail, the missing funds can only be replaced by lifting contribution rates.

Rantala (2020) suggests the solvency capital positions of the private sector pension funds be bolstered by temporarily setting the funding rate from contributions to zero or at a significantly lower level than currently. He suggests developing the solvency capital requirement in a counter-cyclical fashion to support the pension funds' long-term investment horizon, with higher solvency capital requirements during high valuation levels and *vice versa*, and to periodically update the parameters used to compute solvency capital requirements based on current market knowledge. Rantala (ibid.) supports increasing the direct equity allocation from the current levels below 50 % to around 60-65 %.

Kotamäki (2018) asserts that defining the optimal level of pension asset funding is similar to the problem of choosing an investment portfolio, and that the optimal level depends on the decision-maker's risk aversion, and the expected growth of wages and pension asset returns and their variances and covariances. Kotamäki (ibid.) asserts that assuming a lower and probably more realistic level of risk aversion, the level of funding would be higher. Increased political influence on the pension system from pensioners is anticipated to decrease the level of funding in the pension system due to a higher emphasis on the relative consumption power of pensioners (ibid.). Barr (2013) suggests widening the funding base of the ERP system, to also include income other than earnings in defining the mandatory contribution. Other possibilities suggested are incorporating tax funding to support the adaptation of pension funding in economic shocks, and the pooling of the ERP pension liabilities through mandatory arrangements.

Aaltonen *et al.* (2017) advocate for increasing individual choice in pension saving by allowing the individual some control over the timing and risk profile of their pension savings; more control over the timing of retirement; and a possibility to withdraw accumulated pension savings above their minimum pension floor. The reform is hoped to increase public interest towards pension saving (ibid.). Jensen *et al.* (2019b) support

the mandatory nature of the ERP system, as it enables wide coverage and limits adverse selection. Saving for old age may not be straightforward to everyone and individuals may be unable to plan an appropriate saving strategy or be unable to act accordingly. The public may not be aware of associated risks, properly understand likelihoods or have adequate financial knowledge. The administration of individual accounts could bring significant cost increases (ibid.; Barr, 2013). Jensen *et al.* (2019a) support mandatory pension saving and show by using Danish data that mandatory and voluntary pension saving are not substitutes: increasing mandatory pension contributions would decrease private, voluntary savings by 0-30 %.

### 4.3 COVID-19 implications and remedies

The COVID-19 pandemic has simultaneous negative effects on pension funding through both contribution income and investment returns. Furloughs, bankruptcies and increasing unemployment decrease income and thus decrease the contributions paid into the pension system. Weakened stock market valuations hit pension assets directly (Siimes, 2020). The record high global corporate debt at $13,5 trillion, twice the pre-2008 crisis level in real terms, has a record high estimated share with the potential to go sour, likely to further damage pension assets. By 5 May 2020, S&P's had lowered or given a negative outlook on 20 % of the corporate and sovereign debt it monitors due to the COVID-19 pandemic and the oil slump. A fresh study suggests that out of the $3 trillion of BBB investment-grade corporate debt, over a third should be junk-grade (The Economist, 2020b). Figure 19 shows the spread between an index of all BBB investment-grade US corporate bonds and spot US Treasury rates spiking at the end of February 2020 (FRED, 2020). After an extended period of tightening spreads driven by increasing demand for investment grade debt since the 2007-09 crisis, investors sharply sold out in face of the COVID-19 crisis.

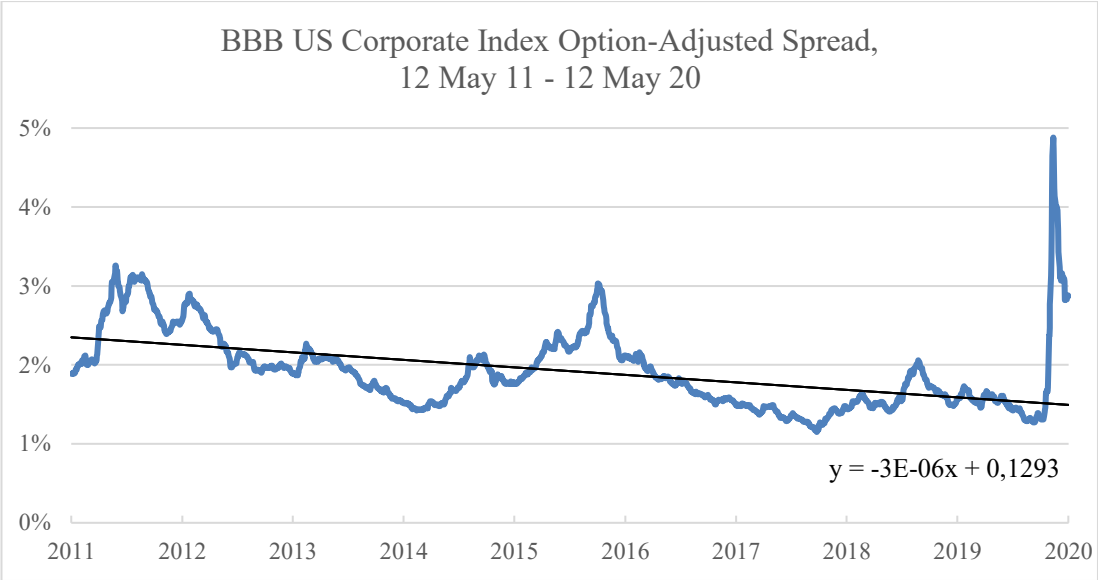


Figure 19: *ICE BofA BBB US Corporate Index Option-Adjusted Spread* (FRED, 2020).

The sovereign debt market especially regarding emerging markets also appears gloomy, as debt defaults appear likely due to diminished income and foreign capital withdrawals. So far 18 sovereigns have had their credit ratings lowered by Fitch, more than in any previous year. Since the beginning of January 2020, investors have withdrawn over $100 bn from emerging market debt and equities, over three times the amount during a similar period in the 2008 crisis. The Economist (2020a) compiled a list of 66 emerging markets, of which 30 countries, liable for just under 25 % of the group's debt, are in distress or close. CNBC (2020) reports EM currencies falling against the US Dollar as asset and commodity values have fallen in the COVID-19 crisis, and suggest further downward pressure can be expected due to the weakened global economic growth outlook. The falling rates act as stabilizers making EM investments cheaper for foreign investors, yet also make servicing dollar denominated debt more costly for EM borrowers, both public and private. Currency runs are not believed to have occurred yet (ibid.). Figure 20 shows an appreciation of EM currencies against the US Dollar in 2019Q4, followed by a sharp depreciation due to the COVID-19 crisis sparking at the end of 2020Q1 (FRED, 2020).

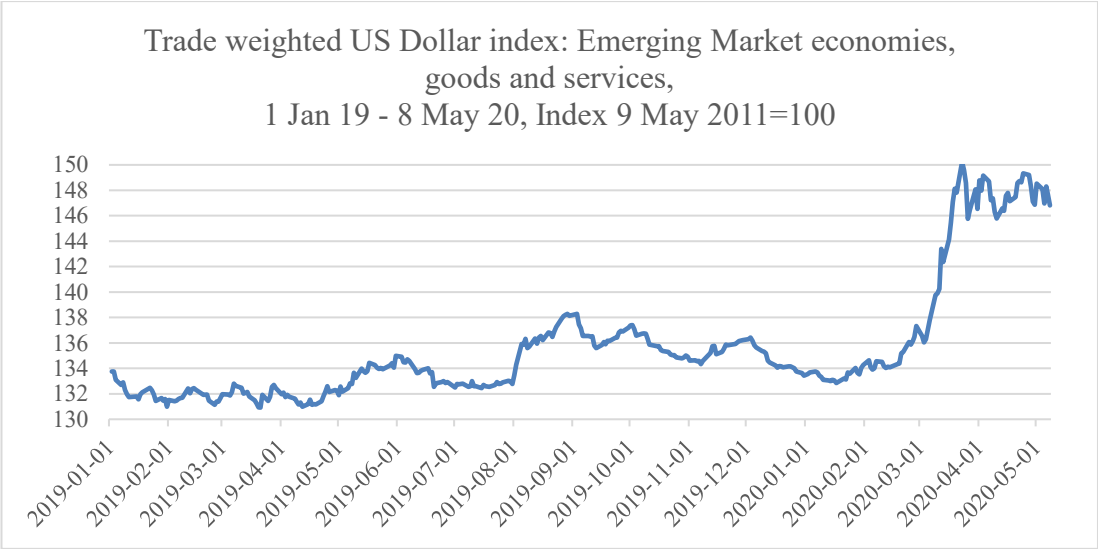


Figure 20: *Trade weighted US Dollar index: Emerging Market economies, goods and services* (FRED, 2020).

Siimes (2020) emphasizes the importance of considering the long-term funding sustainability of the ERP system also during the COVID-19 crisis, as otherwise new problems can be expected ahead. The market crash spawned by the crisis has taken a considerable chunk out of the ERP companies' solvency capital buffers and decreased the overall pension asset value by approximately €20 bn, down by over 10 % from the 2019 year-end €215,3 bn total (Kiander, 2020; Mäkinen, 2020). Kiander (2020) expects COVID-19 to have permanent impacts on investment markets, including increased volatility and the continuation of the low interest rate regime, and on the long-term investment risk and return assessment and goals of pension funds.

The Finnish government has agreed to lower the employers' contribution rate by 2,6 %-points until the end of 2020 as a means to aid businesses, with the missing funds taken from pension system buffer capital. The resulting loss of contribution income is to be repaid with higher employer rates in 2022-2025 (Kautto, 2020b). The government is allowing pension companies a longer period to implement any financial health improvement programs as required by the crisis. The aim is to avoid forcing pension companies to sell their assets at a disadvantageous time. The period is set to end 26 March 2023 (STM, 2020). Vihriälä *et al.* (2020) defend the economic effects of the temporary decrease of employer contribution rates, but criticism from the

pension system's perspective has also been voiced. Siimes (2020) and Vaittinen (2020) assert the effects come too late and have a limited effect in supporting employment; the measure affects all sectors similarly while the pandemic's effects are not equally distributed; the already-decreasing sum of wages paid due to furloughs and decreasing employment diminish the effect of the rate cut for businesses; lower contributions must be covered with buffer funds; and shortfalls in pension fund capital buffers need to be met by realizing investments, causing long-term funding challenges.

Effects on the real economy cannot yet be fully seen. The pandemic will have global supply side effects through e.g. decreasing production and a component shortage due to international trade limitations, limiting end product manufacturing. Demand side effects include the halt of hotel, restaurant, travel, culture, sports, and trade demand (Vaittinen, 2020). The U.S. annualized quarter-on-quarter real GDP for the first quarter of 2020 fell by 4,8 %, while personal consumption fell 7,6 %, services consumption fell 10,2 %, business fixed investment fell 8,6 %, retail sales fell 8,6 % (yahoo! Finance, 2020a). China's GDP fell 6,8 % year-on-year in 2020Q1 and the Eurozone economies' GDP at a 14,8 % annualized rate. The U.S. economy is believed to sink at an annualized rate of 25 % in 2020Q2. Approximately 42 % of job losses are projected to remain permanent. However, e.g. Amazon and Walmart have started hiring amid the crisis to meet increased demand, leading to approximately three new hires for every 10 job losses. COVID-19 is effectively creating a reallocation shock. Significant long-term changes are expected in the reallocation of jobs and capital. A drawn-out economic recovery from the COVID-19 shock is expected, based on creation responses lagging the destruction responses in reallocation shocks by a year or more in historic data (Barrero *et al.*, 2020).

30 % of U.S. 401(k) pension savers have withdrawn on average $6 757,20 from their retirement accounts, while another 19 % plan to withdraw funds. Withdrawing pension savings has been made cheaper in the CARES Act, aiming to ease acute personal financial distress in the COVID-19 crisis. However, withdrawing pension savings early may pose personal financial challenges in the future (yahoo! Finance, 2020b). The U.S. figures suggest grim figures for Europe also, where anti-pandemic measures

and lockdowns were initiated earlier, limiting economic activity for longer. Kiander (2020) notes that furloughs shorter than three months are reported as continuing employment in Finland, leading to employment figures looking better than the reality is. Kiander anticipates up to 300 000 Finnish workers being furloughed in 2020. Kilponen (2020) estimates the 2020 employment rate at 68 – 71 %, versus a December 2019 estimate anticipating 73 %.

Vihriälä *et al.* (2020) anticipate production and employment to remain on a lower growth path for an extended period and call for policy reforms to support economic growth. Public debt is expected to rise from 59,4 % at year-end 2019 up to 90 % of GDP by the end of the 2020s in the best scenario. Without policy reforms however, debt growth is expected to continue through the 2030s. The public finance imbalances are expected to deepen, as driven mainly by population aging. Laid-off workers close to retirement age are likely to remain outside the workforce permanently and lay-offs in downturns affect low-income workers especially, causing greater and longer-term income losses than lay-offs in upturns. Vihriälä *et al.* (ibid.) urge removing the incentives to withdraw from employment before the retirement age, to incentivize seeking employment faster than currently, and to target policy actions to those more likely to fall out of employment. The Bank of Finland (2020) estimates the Finnish GDP to shrink by 4,7 % in 2020 and to grow by 2,7 % and 2,4 % in 2021 and 2022, respectively.

To increase the Finnish economy's long-term growth potential, Kurronen (2020) recommends working to return the level of education in Finland on an upward path, to strive for increasing the employment rate, to cut the index-increases of pension benefits for the next three years and limiting the benefit period in widowers' pensions. Kurronen (ibid.) urges the removal of the unemployment pathway to retirement (*eläkeputki*), specifically removing the extensions to unemployment benefit periods, shortening the maternity/paternity leave benefit period, to put effort into shortening periods of unemployment, and to reconsider the salary raises negotiated by labor organizations just before the COVID-19 crisis.

The Ministry of Finance (MoF) (2020b) supports removing all possible early pathways to retirement, including removing special provisions regarding disability pensions, dropping the partial old-age pension and removing the unemployment pathway to retirement. MoF (ibid.) recommends updating the earnings-related unemployment benefit so that a person's future pension will be deducted by an amount based on the number of days on unemployment benefit just prior to retirement. The purpose is to increase the incentive to remain in working life until retirement and to increase the employment rate among older workers. MoF (ibid.) shows a significant increase in the employment rate among older age groups following the removal of unemployment benefit "extra days" available to the respective age groups earlier.

### 4.3.1 Finnish pension fund performance

| | ILMARINEN | | VARMA | | TyEL COMPANIES | | KEVA | | VER | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Net investment return** | **2019Q1** | **2020Q1** | **2019Q1** | **2020Q1** | **2019Q1** | **2020Q1** | **2019Q1** | **2020Q1** | **2019Q1** | **2020Q1** |
| Equities and shares | 8,8 % | -12,8 % | 10,0 % | -14,6 % | 9,3 % | -14,6 % | 9,5 % | -16,6 % | 11,6 % | -18,8 % |
| Listed equities and shares | 11,0 % | -18,2 % | 13,1 % | -21,1 % | 12,0 % | -20,3 % | 11,8 % | -22,0 % | 12,7 % | -21,6 % |
| Fixed-income investments | 2,0 % | -6,9 % | 1,9 % | -3,6 % | 2,0 % | -4,9 % | 2,5 % | -5,7 % | 2,0 % | -5,3 % |
| Real estate investments | 1,0 % | 1,7 % | 0,7 % | 1,3 % | 1,1 % | 1,4 % | 0,6 % | 1,4 % | 4,5 % | -7,5 % |
| Other investments | -1,8 % | 8,1 % | 1,9 % | -13,9 % | 1,2 % | -6,9 % | 2,0 % | -3,0 % | 1,6 % | -9,6 % |
| Investments total | 4,6 % | -7,5 % | 5,1 % | -10,0 % | 4,9 % | -8,9 % | 5,5 % | -10,4 % | 6,6 % | -12,6 % |
| | **31.12.2019** | **31.3.2020** | **31.12.2019** | **31.3.2020** | **31.12.2019** | **31.3.2020** | **31.12.2019** | **31.3.2020** | **31.12.2019** | **31.3.2020** |
| **Investments, € m.** | 50 528 | 46 403 | 48 709 | 43 597 | 128 289 | 116 136 | 56 166 | 50 189 | 20 588 | 17 864 |

Table 9: *Net investment returns and assets* (Keva, 2020; TELA, 2020; VER, 2020).

Table 9 shows the 2019Q1 and 2020Q1 net investment returns for Ilmarinen, Varma, the combined figures for the TyEL pension companies Ilmarinen, Varma, Elo and Veritas, and the figures for the public sector Keva and VER. Investment assets in € millions at year-end 2019 and after 2020Q1 are also displayed. It can be observed that the public sector pension companies generated greater negative returns in 2020Q1 than the private sector companies. However, table 10 shows the public sector pension companies also have a greater exposure to both equities and fixed income as allowed by the companies not having solvency requirements. Figure 18 showed the public sector pension companies often generate both greater positive and negative returns than their private sector counterparts.

| Basic breakdown | ILMARINEN | | VARMA | | TyEL COMPANIES | | KEVA | | VER | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 31.12.2019 | 31.3.2020 | 31.12.2019 | 31.3.2020 | 31.12.2019 | 31.3.2020 | 31.12.2019 | 31.3.2020 | 31.12.2019 | 31.3.2020 |
| Other investments | 7 % | 9 % | 18 % | 20 % | 11 % | 13 % | 7 % | 8 % | 5 % | 5 % |
| Real estate investments | 13 % | 14 % | 9 % | 11 % | 11 % | 13 % | 6 % | 7 % | 5 % | 5 % |
| Equities and shares | 47 % | 44 % | 46 % | 40 % | 47 % | 42 % | 49 % | 46 % | 51 % | 50 % |
| Fixed-income investments | 34 % | 33 % | 27 % | 30 % | 31 % | 32 % | 38 % | 39 % | 39 % | 41 % |
| **Risk breakdown** | | | | | | | | | | |
| | 31.12.2019 | 31.3.2020 | 31.12.2019 | 31.3.2020 | 31.12.2019 | 31.3.2020 | 31.12.2019 | 31.3.2020 | 31.12.2019 | 31.3.2020 |
| Effect of derivatives | 5 % | 3 % | -2 % | -1 % | 0 % | -2 % | -1 % | -12 % | 1 % | 1 % |
| Other investments | 10 % | 10 % | 20 % | 20 % | 13 % | 13 % | 7 % | 8 % | 5 % | 5 % |
| Real estate investments | 13 % | 14 % | 9 % | 11 % | 11 % | 13 % | 6 % | 7 % | 5 % | 5 % |
| Equities and shares | 47 % | 42 % | 46 % | 40 % | 47 % | 42 % | 48 % | 47 % | 51 % | 50 % |
| Fixed-income investments | 26 % | 31 % | 27 % | 30 % | 29 % | 34 % | 40 % | 51 % | 37 % | 39 % |

Table 10: *The basic and risk-adjusted investment allocations at market values* (TELA, 2020).

The negative returns from fixed-income investments were due to decreasing instrument valuations in lower-grade investments, the decrease of commodity and oil prices and the widening of credit risk margins. Central bank measures helped to lower credit risk premiums from record high levels by the end of March 2020. From year-end 2018 to year-end 2019 Ilmarinen had increased the share of BBB-or-lower grade debt in its portfolio from 56 % to 66 %, while Varma had decreased its held share from 54 % to 52 %. At year-end 2019 Ilmarinen had an 11 % investment allocation to China and other EMs, while at 2020Q1-end Varma had a 20 % allocation to markets other than Finland, Europe, or North America. From year-end 2019 to the end of 2020Q1, Ilmarinen's solvency ratio decreased from 126,6 % to 120,7 %, and Varma's solvency ratio decreased from 130,8 % to 121,6 %. At year-end 2019 Ilmarinen reported its 2,5 % Value-at-Risk at €2 688 m, or 5,3 % of its investments and 24,9 % of its solvency capital, indicating a 2,5 % probability of investment capital decreasing by the indicated amount or more in one month. Varma reported its year-end 2019 2,5 % VaR at €1 371 m, 2,8 % of its investments and 11,8 % of solvency capital. Ilmarinen did not report its 2020Q1-end VaR. Varma reported a considerable increase in its VaR, now at €3 807 m or 8,7 % of its investments and 48,4 % of solvency capital (Ilmarinen, 2020; Varma, 2020;).

## 4.4 Exercise on increasing the contribution rate

The current TyEL contribution rate is 24,4 % and is to remain so until at least 2021. Reipas (2019) uses the 24,4 % contribution rate in calculations until 2050 and expects the rate to increase to 31,4 % between 2050 – 2085. The expected aging of the

population in e.g. Väestöliitto (2020) means the higher contribution rate will be paid by a smaller employed population relative to the retired. The COVID-19 pandemic implies that income and production in the economy are down, which is not an optimal premise for raising mandatory payments such as the pension or unemployment insurance contributions from the standpoint of lifting the economy back on its feet. The Employment Fund (Työllisyysrahasto) (2020) lowered the unemployment insurance payment for 2020 by 0,5 %-points due to favorable earlier employment developments. It now plans to increase the payment by 0,32 %-points to 2,82 % in 2021 to off-set some of the funding deficit COVID-19 created. The mandatory TyEL contribution rate was cut by 2,6 %-points for employers for the period May-December 2020, with the deficit to be repaid with a higher employer contribution between 2022-2025 (Kautto, 2020b).

This subchapter presents a speculative case where the mandatory TyEL contribution rate is increased by one percentage point to 25,4 % until 2050, the year Reipas (2019) uses the 24,4 % rate until. The purpose is to study and compare the magnitude that private sector pension assets could achieve compared to the basic trend and to compare the required contribution rates to achieve the level of assets in 2065 presented in Reipas (2019). Should funds increase considerably, it implies the pressure for further and significant rate hikes in the future decreases. Another calculation presents the effect of having had 1 %-point higher contributions during 2007-2018 and transferring the increased income over the realized level directly to funded assets. The effect on the level of pension assets from the higher contribution and the resulting changes investment returns is considered, as is the increased contribution's effect on a worker's annual net income. The purpose is to study the level pension assets could have reached and infer the usefulness of immediately increasing the contribution rate from the pension system's perspective, and to study the degree a consumer's net income would be affected.

### 4.4.1 Speculation on future contribution rates

FCP (2020a) assumptions of future real investment returns are applied: 2,5 % p.a. for 2020-2028 and 3,5 % p.a. from 2029 onwards. In table 11, the basic case presents the price-corrected amounts of assets for 2020, 2025, 2030, 2045 and 2065 presented in Reipas (2019; Statistics Finland, 2020a). The pension benefits and salary under TyEL for the same years are also from Reipas (2019). The annual salary, pension benefits and expense figures between 2020-2065 and outside the abovementioned years have been calculated using the compound annual growth rate to simulate a steady growth leading to the estimated future figures in Reipas (ibid.) (Wikipedia, 2020).

$$CAGR = (\frac{Ending\ value}{Beginning\ value})^{\frac{1}{n}} - 1$$

**Basic case, € m**

| Year | Assets | Salary under TyEL | Contribution income | Contribution rate | Pension benefits | Investment returns | Real rate of return |
|---|---|---|---|---|---|---|---|
| 2020 | 132 642 | 61 953 | 15 117 | 24,40 % | 16 108 | 3 408 | 2,5 % |
| 2025 | 141 424 | 66 835 | 16 308 | 24,40 % | 17 912 | 3 491 | 2,5 % |
| 2030 | 151 737 | 72 497 | 17 689 | 24,40 % | 19 864 | 5 237 | 3,5 % |
| 2045 | 209 317 | 91 614 | 22 354 | 24,40 % | 24 461 | 7 174 | 3,5 % |
| 2050 | 229 184 | 96 742 | 23 605 | 24,40 % | 27 089 | 7 935 | 3,5 % |
| 2060 | 287 594 | 107 875 | 29 379 | 27,23 % | 33 224 | 9 882 | 3,5 % |
| 2065 | 311 439 | 113 913 | 31 668 | 27,80 % | 36 794 | 10 732 | 3,5 % |

**Speculative case, € m**

| Year | Assets | Salary under TyEL | Contribution income | Contribution rate | Pension benefits | Investment returns | Real rate of return |
|---|---|---|---|---|---|---|---|
| 2020 | 133 262 | 61 953 | 15 736 | 25,40 % | 16 108 | 3 408 | 2,5 % |
| 2025 | 143 605 | 66 835 | 16 976 | 25,40 % | 17 912 | 3 542 | 2,5 % |
| 2030 | 155 618 | 72 497 | 18 414 | 25,40 % | 19 864 | 5 333 | 3,5 % |
| 2045 | 218 798 | 91 614 | 23 270 | 25,40 % | 24 461 | 7 464 | 3,5 % |
| 2050 | 245 434 | 96 742 | 24 572 | 25,40 % | 27 089 | 8 410 | 3,5 % |
| 2060 | 295 514 | 107 875 | 27 797 | 25,77 % | 33 224 | 10 203 | 3,5 % |
| 2065 | 311 439 | 113 913 | 29 352 | 25,77 % | 36 794 | 10 810 | 3,5 % |

Table 11: *The basic pattern of pension asset development 2020-2065 versus a speculative case with an initially higher contribution rate; 2019 prices* (Reipas, 2019; Statistics Finland, 2020a; own calculations).

The contribution rates are fixed at 24,4 % and 25,4 % through 2050 in the basic and speculative cases, respectively. The amount of TyEL assets by 2050 is 7,1 % higher than in the basic case due to the higher contribution rate and higher investment returns on the higher volume of assets. Reipas (2019) predicts the 2065 contribution rate to be 27,8 %, up considerably from the 24,4 % level used through 2050. Starting from 2051,

a fixed contribution rate has been calculated for both the basic and speculative case, which leads to the level of assets predicted in Reipas (2019) for 2065 through contribution income and investment returns on the increasing assets. In the basic case, after keeping the contribution level at 24,4 % through 2050, a fixed contribution rate to reach the indicated asset volume is 27,23 % in the period 2051-2064, and 27,8 % in 2065. To reach the same asset volume in the speculative case, where the contribution rate is 25,4 % from 2020 onwards, the 2051-2065 contribution rate is 25,77 %. The need to further increase the contribution rate in the speculative case is considerably diminished.

| Year | GDP, € m | Basic | Speculative |
|---|---|---|---|
| 2025 | 239 390 | 59,08 % | 59,99 % |
| 2030 | 253 349 | 59,89 % | 61,42 % |

Table 12: *Basic and speculative case pension assets as a share of GDP* (Reipas, 2019; MoF, 2020a; own calculations).

Table 12, based on MoF (2020a) GDP estimates, indicates the share of GDP that pension assets amount to in the basic and speculative cases. Strictly from the TyEL system's perspective, it is clear that raising the pension contribution rate by 1 %-point effective immediately does prepare the TyEL system better in anticipation of future challenges. The absolute level of assets increases, the assets as a share of GDP increase, and the pressure and needed magnitude for further rate hikes decreases. The increased contribution rate itself helps to accumulate more assets faster, while the higher volume of assets also accumulates a higher volume of investment returns, significantly and further increasing the asset volume.

### 4.4.2 Contribution rate-hike effects on past data

This second part of the exercise is two-fold. First, a look backwards over 2007-2019, comparing the realized TyEL assets, payments, returns, and expenses to modified ones where the contribution rate is higher by 1 %-point. The difference in contribution incomes is wholly funded, as the level of paid benefits stays the same. Second, a look at the effect raising the contribution rate has on a worker's net income over 2007-2018. An average annual TyEL contribution and a flat 23 % income tax are deducted from

the median income to simulate the effect of taxes and other mandatory payments. The share of the contribution payment made by the employee and employer each year in the period is calculated from the realized contribution income. The same relation is used in the case with the raised contribution rate. TyEL-related data is from FCP (2020b), while median income data is from Statistics Finland (2020a).

Table 13 shows the realized development of pension assets and payments over 2007-2019 with the annual amounts of contributions transferred to funds and the amounts of payments made from funded assets. Also presented is a speculative case where the contribution rate has been raised by 1 %-point for each year. The benefits paid annually remain the same, so the increased income is funded and is shown as increasing assets, which lead to greater investment returns in absolute terms. The column Others includes operating expenses, taxes, transfers, payments from the Finnish Employment Fund and other expenses.

**Realized, € m**

| Year | Assets | Contribution | Contribution rate | Funded income | Benefits | From funds | Investment returns | Investment returns, % | Others |
|---|---|---|---|---|---|---|---|---|---|
| 2007 | 85 247 | 9 496 | 20,9 % | 2 000 | - 8 426 | - 1 000 | 4 290 | - | 24 |
| 2008 | 73 750 | 10 339 | 21,1 % | 2 000 | - 9 133 | - 800 | - 12 825 | -15,0 % | 122 |
| 2009 | 83 829 | 9 968 | 21,1 % | 1 800 | -10 054 | - 1 800 | 10 115 | 13,7 % | 51 |
| 2010 | 92 273 | 10 261 | 21,2 % | 1 900 | -10 614 | - 2 100 | 8 853 | 10,6 % | - 57 |
| 2011 | 89 368 | 11 087 | 21,9 % | 1 800 | -11 275 | - 1 900 | - 2 741 | -3,0 % | 23 |
| 2012 | 96 616 | 11 825 | 22,7 % | 2 000 | -11 904 | - 2 100 | 7 370 | 8,2 % | - 43 |
| 2013 | 103 743 | 11 917 | 22,8 % | 1 800 | -12 815 | - 2 600 | 7 946 | 8,2 % | 80 |
| 2014 | 109 589 | 12 166 | 23,2 % | 2 000 | -13 484 | - 3 100 | 6 972 | 6,7 % | 191 |
| 2015 | 114 011 | 12 666 | 23,9 % | 2 000 | -13 979 | - 2 900 | 5 404 | 4,9 % | 331 |
| 2016 | 118 659 | 13 046 | 24,1 % | 2 000 | -14 429 | - 3 100 | 5 815 | 5,1 % | 216 |
| 2017 | 126 152 | 13 531 | 24,1 % | 2 400 | -14 961 | - 3 600 | 8 707 | 7,3 % | 217 |
| 2018 | 122 963 | 14 187 | 24,1 % | 2 700 | -15 367 | - 3 700 | - 2 037 | -1,6 % | 28 |
| 2019 | 136 320 | 14 971 | 24,5 % | 2 700 | -16 135 | - 3 700 | 14 524 | 11,8 % | - 3 |

**Speculative, € m**

| Year | Assets | Contribution | Contribution rate | Funded income | Benefits | From funds | Investment returns | Investment returns, % | Others |
|---|---|---|---|---|---|---|---|---|---|
| 2007 | 85 700 | 9 950 | 21,9 % | 2 453 | - 8 426 | - 1 000 | 4 290 | - | 24 |
| 2008 | 74 624 | 10 828 | 22,1 % | 2 489 | - 9 133 | - 800 | - 12 893 | -15,0 % | 122 |
| 2009 | 85 297 | 10 441 | 22,1 % | 2 273 | -10 054 | - 1 800 | 10 235 | 13,7 % | 51 |
| 2010 | 94 379 | 10 745 | 22,2 % | 2 384 | -10 614 | - 2 100 | 9 008 | 10,6 % | - 57 |
| 2011 | 91 917 | 11 593 | 22,9 % | 2 306 | -11 275 | - 1 900 | - 2 804 | -3,0 % | 23 |
| 2012 | 99 896 | 12 346 | 23,7 % | 2 521 | -11 904 | - 2 100 | 7 580 | 8,2 % | - 43 |
| 2013 | 107 816 | 12 440 | 23,8 % | 2 323 | -12 815 | - 2 600 | 8 216 | 8,2 % | 79 |
| 2014 | 114 460 | 12 691 | 24,2 % | 2 524 | -13 484 | - 3 100 | 7 246 | 6,7 % | 190 |
| 2015 | 119 653 | 13 196 | 24,9 % | 2 531 | -13 979 | - 2 900 | 5 644 | 4,9 % | 330 |
| 2016 | 125 132 | 13 588 | 25,1 % | 2 542 | -14 429 | - 3 100 | 6 103 | 5,1 % | 215 |
| 2017 | 133 660 | 14 091 | 25,1 % | 2 960 | -14 961 | - 3 600 | 9 182 | 7,3 % | 216 |
| 2018 | 130 938 | 14 776 | 25,1 % | 3 288 | -15 367 | - 3 700 | - 2 159 | -1,6 % | 26 |
| 2019 | 145 849 | 15 583 | 25,5 % | 3 312 | -16 135 | - 3 700 | 15 466 | 11,8 % | - 5 |

Table 13: *The realized development of pension assets and payments 2007-2019 versus a speculative case with 1 %-point higher contributions* (FCP, 2020b; own calculations).

Table 14 presents the cumulative contribution income, paid benefits, investment returns and assets at the end of 2019 in the realized and speculative cases. Assets have grown by €9,5 bn more in the speculative case over the period 2007-2019, with most of the growth coming from the increased amount of assets funded and a bit more than a quarter from the higher volume of investment returns. At the end of 2019, assets as a share of GDP are 4 %-points higher in the speculative case with a higher contribution rate than in the realized case. In the forward-looking speculative case in chapter 4.4.1., a similar asset value of near € 146 bn would be reached only amid 2028 if the contribution rate were raised starting from 2020 with the prevailing asset values.

**2007-2019 cumulative, € m**

| | Realized | Speculative | Difference |
|---|---|---|---|
| Contribution income | 155 459 | 162 267 | 6 808 |
| Funded | 27 100 | 33 908 | 6 808 |
| Paid benefits | - | 162 574 | - |
| From funds | - | 32 400 | - |
| Investment returns | 62 391 | 65 113 | 2 722 |
| Assets, end of 2019 | 136 320 | 145 849 | 9 529 |
| As share of GDP | 56,8 % | 60,8 % | |

Table 14: *The realized and speculative cumulative contributions, payments, investment returns and end-of-period assets for 2007-2019* (FCP, 2020b; own calculations).

Table 15 presents the realized and speculative TyEL contributions over 2007-2018 and the share paid by employees. Omitted are the employer contributions, which are the total contributions less the employees' contributions. Also presented are the realized median income, the number of workers who made TyEL contributions in the period, the average contribution as the employees' contributions divided by those paying contributions, and the speculative net income, computed as the median income less the arbitrary income tax and the average pension contribution. The difference in net income is increasing from € 53,12 in 2007 to € 84,33 in 2018, net income being annually lower by an average € 67,37 or 0,255 % in the speculative case. The share of the contribution paid by the employee and employer are the same as in the realized data. The results indicate that raising the contribution rate by 1 %-point over 2007-2018 has a negligible effect on a median salary earning worker's net income. Raising the contribution rate by 1 %-point over the period means the annual contribution payments paid by both the employee and the employer would have been on average 4,41 % higher. Over a long period, this is a considerable additional expense for employers. However, this calculation should not be taken as the absolute truth because

of the plentiful assumptions made, but rather as an indication of the possible magnitude raising the contribution rate could have.

**Realized contributions**

| Year | Contribution rate | Contributions, € m | *By employees* | Median income, € | Tax rate | TyEL employed | Avg. Contribution, € | Net income, € |
|---|---|---|---|---|---|---|---|---|
| 2007 | 20,9 % | 9 496 | 2 031 | 31 032 | 23 % | 1 825 447 | 1 112 | 22 782 |
| 2008 | 21,1 % | 10 339 | 2 087 | 32 772 | 23 % | 1 859 950 | 1 122 | 24 112 |
| 2009 | 21,1 % | 9 968 | 2 132 | 33 816 | 23 % | 1 799 441 | 1 185 | 24 854 |
| 2010 | 21,2 % | 10 261 | 2 284 | 34 680 | 23 % | 1 809 171 | 1 262 | 25 441 |
| 2011 | 21,9 % | 11 087 | 2 501 | 35 412 | 23 % | 1 835 794 | 1 362 | 25 905 |
| 2012 | 22,7 % | 11 825 | 2 841 | 36 312 | 23 % | 1 832 068 | 1 550 | 26 410 |
| 2013 | 22,8 % | 11 917 | 2 858 | 37 200 | 23 % | 1 817 632 | 1 572 | 27 072 |
| 2014 | 23,2 % | 12 166 | 3 054 | 37 620 | 23 % | 1 804 331 | 1 693 | 27 275 |
| 2015 | 23,9 % | 12 666 | 3 194 | 38 040 | 23 % | 1 803 078 | 1 772 | 27 519 |
| 2016 | 24,1 % | 13 046 | 3 297 | 38 316 | 23 % | 1 819 304 | 1 812 | 27 691 |
| 2017 | 24,1 % | 13 531 | 3 634 | 38 640 | 23 % | 1 876 910 | 1 936 | 27 817 |
| 2018 | 24,1 % | 14 187 | 3 898 | 39 336 | 23 % | 1 916 932 | 2 033 | 28 255 |

**Speculative contributions**

| Year | Contribution rate | Contributions, € m | *By employees* | Median income, € | Tax rate | TyEL employed | Avg. Contribution, € | Net income, € |
|---|---|---|---|---|---|---|---|---|
| 2007 | 21,9 % | 9 950 | 2 128 | 31 032 | 23 % | 1 825 447 | 1 166 | 22 729 |
| 2008 | 22,1 % | 10 828 | 2 186 | 32 772 | 23 % | 1 859 950 | 1 175 | 24 059 |
| 2009 | 22,1 % | 10 441 | 2 233 | 33 816 | 23 % | 1 799 441 | 1 241 | 24 798 |
| 2010 | 22,2 % | 10 745 | 2 391 | 34 680 | 23 % | 1 809 171 | 1 322 | 25 382 |
| 2011 | 22,9 % | 11 593 | 2 615 | 35 412 | 23 % | 1 835 794 | 1 424 | 25 843 |
| 2012 | 23,7 % | 12 346 | 2 966 | 36 312 | 23 % | 1 832 068 | 1 619 | 26 341 |
| 2013 | 23,8 % | 12 440 | 2 983 | 37 200 | 23 % | 1 817 632 | 1 641 | 27 003 |
| 2014 | 24,2 % | 12 691 | 3 186 | 37 620 | 23 % | 1 804 331 | 1 766 | 27 202 |
| 2015 | 24,9 % | 13 196 | 3 328 | 38 040 | 23 % | 1 803 078 | 1 846 | 27 445 |
| 2016 | 25,1 % | 13 588 | 3 434 | 38 316 | 23 % | 1 819 304 | 1 888 | 27 616 |
| 2017 | 25,1 % | 14 091 | 3 784 | 38 640 | 23 % | 1 876 910 | 2 016 | 27 736 |
| 2018 | 25,1 % | 14 776 | 4 059 | 39 336 | 23 % | 1 916 932 | 2 118 | 28 171 |

Table 15: *Realized and speculative contribution levels and the effect on net income for a median salary earner* (FCP, 2020b; Statistics Finland, 2020a; own calculations).

# 5 CONCLUSIONS

## 5.1 Suggestions of updates

This thesis has presented a country comparison between the earnings-related pension systems in Denmark, Finland and the Netherlands, and a comprehensive overview of the state of the discussion in Finland regarding updating the financial sustainability of the system. Details of each pension system have been presented. The level of assets and accumulated pension rights, the annual contributions and benefit payments, demographic and employment data, and investment returns and allocations have been compared. Finally, the directions different entities in Finland would like to see the ERP system develop have been visited, and a speculative calculation of the likely effects of immediately increasing the contribution rate by 1 %-point was presented. The purpose of the research was to find out how to update the Finnish ERP system to improve long-term financial sustainability while supporting intergenerational equality. This chapter will next present recommendations of actions to support the financial sustainability from the ERP system's perspective, and the contributions of this thesis to the social discussion.

First, the employment rate is one of the most vital factors in the long-term financial health of the Finnish ERP system. It is lagging behind Denmark and the Netherlands and should be increased to improve the long-term financial sustainability of the ERP system, but also personal well-being and public finances. The unemployment pathway to retirement should be removed to increase employment among older ages and enabling more part-time work would help the young and old to enter and remain in working life. People with a hindered capacity to work and unable to work full-time could also be in part-time employment. Incentives to remain in working life for longer could be introduced, e.g. Barr (2013) recommends limiting the dependency of the public national and guarantee pensions on accrued occupational pensions. Someone who has accrued a small occupational pension and has been away from employment for long may see their total pension benefit decrease when entering employment due to the public benefits being cut based on increases in the private pension.

Second, the forecast demographic development in Finland is leading to enormous pressure on the working population to support those on pension. Denmark and the Netherlands expect to see the old-age and system dependency ratios increase towards the latter half of the century, but by very little compared to Finland. Finland should strive to attract work-related immigration better and consider the recommendations in Väestöliitto (2020) to implement a meditated population policy in trying to increase the total fertility rate.

Third, the level of contribution income funding and the contribution rate are direct ways to influence the long-term sustainability of the Finnish ERP system. Rantala (2020) suggests decreasing the level of contribution income funding so that after covering the solvency capital requirement, more investment returns would be left to control the pressure to increase the contribution rate and a larger share of pension benefit payments could be made with contribution income. The aging of the population and thus the increasing relation of pensioners to the employed means that eventually the contribution income will require more support from the accumulated pension assets, which will start diminishing. This in turn leads to lower volumes of investment returns, exacerbating the cycle, and likely the contribution rate would have to be raised considerably at a future date. The positive side is, especially amid the COVID-19 pandemic, that the contribution rate would not be raised for some time and the competitiveness of the Finnish economy would not be hurt further.

Strictly from the ERP system's perspective, it seems a sounder solution to consider increasing the contribution rate by e.g. 1 %-point as was speculated in chapter 4.4 – if not now, then in the near future. The direct positive effect on pension assets is significant, and it is supported by the increasing volume of investment returns to a greater pool of assets. The procedure would better uphold the intergenerational equality of the ERP system, as growing the pool of assets begins at a time of healthier old-age and system dependency ratios. However, the pension expenses for both employers and employees would have been on average 4,41 % higher annually over 2007-2019 with a 1 %-point higher contribution rate, which means raising the contribution rate brings not-insignificant added costs to employers. Hence, the time to

raise the contribution rate is probably not before the broader economy has recovered from COVID-19, yet raising the rate well before 2050 would be beneficial for the financial sustainability of the ERP system and for upholding intergenerational equality. The changes in the net income for a median salary-earning worker are negligible, meaning little changes in current consumption could be expected.

Fourth, the pension schemes in Denmark and the Netherlands are most often not company specific like in Finland but organized at a sectoral or industry level. This pooling of pension agreements helps bring down the administrative costs by creating economies of scale and thus is worth considering in Finland also. Better Finance (2019) asserts that a 0,1 %-point drop in expenses eases the pressure to increase contribution rates by 3 %-points over a 25-year medium term.

Fifth, the solvency capital requirements on the Finnish TyEL funds aim to limit risk-taking and are almost too efficient. Aaltonen *et al.* (2017) and Vaittinen (2019) assert a 1 %-point's change in investment returns causes a 2 %-point change in the pressure to increase the contribution rate. The Danish first-pillar ATP does not fall under solvency capital requirements similarly to Finnish Keva and VER, and has outperformed its private sector counterparts consistently, similarly to the public and private sector pension funds in Finland. This is not to support removing the solvency capital requirement but limiting it to allow the Finnish private sector funds more risk-taking. The fixed required rate of return and fund-increasing supplementary factor together are high in the prevailing low-interest rate regime and are not attainable with low-risk instruments, while high-risk instruments bind more solvency capital. The allowed level of risk-taking and return requirements are at odds. The funded assets must be topped up with solvency capital during weak returns, which further undermines the pension fund's ability to bear risk. The present value of pension liabilities has increased due to the low interest rates, effectively making providing pension benefits more expensive. The fixed discount rate should be made a market-based rate, and the solvency capital requirement be made counter-cyclical, so that the capital requirement in downturns is lower than in upturns. The parameters used in computing the solvency capital requirement should also be updated regularly

according to the market situation. The level of investment expertise in the management boards of the TyEL institutions should also be increased.

Sixth, a pension ceiling similar to that in the Netherlands should be implemented. This means a maximum level of annual income insurable in the statutory pension system. Income above this maximum threshold could be privately pension insured if so desired by the individual but is not required. The contributions paid by high-earning participants help to pay out current pension benefits, but also create an additional burden on future generations having to pay out the high accrued benefits of high-earning participants. This could limit the development of extremely high pension benefits and thus ease the future funding balance of the ERP system when the relation of pensioners to the employed increases.

This thesis produced tangible recommendations on improving the financial sustainability of the Finnish ERP system and pooled together current lines of societal discussion on the matter from Finland, Denmark, and the Netherlands. The thesis also went against the currant by speculating on the idea of increasing the pension contribution rate sooner rather than later. The recommendations made in this chapter include ones that require more significant cooperation by lawmakers and social partners, but others are relatively easily adoptable. Although raising the contribution rate in the very near future could significantly aid the financial sustainability of the ERP system, the increasing costs especially for employers might decrease the willingness to employ workers. However, if the contribution rate was increased now rather than later, the hike could be much less steep than what is projected inevitable in the future and would better uphold the intergenerational equality of the ERP system.

## 5.2 Limitations and scope for further research

The primary limitation is inherent in the topic – Discussion on improvements to the financial sustainability of the Finnish earnings-related pension system. The ERP system is a complex institution, and the funding side of it is such also alone. Technical details of capital requirements and regulations could have been opened up more, yet their inclusion would have made the thesis overtly technical and possibly taken away from the actual topic. The speculative exercise on increasing the contribution rate performed in chapter 4.4 is computed based on the most recent and official numbers realized in the pension system and on forecasts by the Finnish Centre for Pensions, but also on personal assumptions and should be considered a policy recommendation without comprehensive further calculations. It is hard to separate the investment procedures and returns of a pension system from its incomes and expenses, pensions included, but limiting the scope in this manner could be beneficial for the informativeness and thoroughness of future research.

The validity of the study is built upon using a comprehensive set of current private and public sector produced studies and data. The numbers are predominantly from official public institutions or associations of pension insurers, while the referenced studies are from both the aforementioned, non-governmental organizations, university studies and private think-tanks and consultancies. In most cases, several authors cite similar information as facts and recommendations, while the numbers' data sources have been compared to each other to find any discrepancies. The credibility of different data sources and the validity of creating the exercise on increasing the contribution rate have also been discussed with the thesis supervisor.

Further research should be conducted on the societal costs of increasing the pension contribution rate. What is the type and magnitude of reactions from employers if the contribution rate was increased, and what is the type and magnitude of change in consumer behavior following a decrease in the net income are both crucial questions. In case the anticipated reactions are negligible, it seems raising the contribution rate would do the pension system well, but if the reactions are significant and negative,

leading to the broader economy suffering, the pension system could suffer due to falling employment and income levels. Were the contribution rate to be raised sooner than later, an appropriate timeline should be researched – the best time to increase payments most likely is not amid the COVID-19 pandemic and its repercussions. An appropriate level for the pension ceiling should also be researched, so the ceiling would meaningfully close out above-maximum shares of incomes, while still allowing the accrual of a stable statutory pension that reflects the person's working life income.

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